Extron® Electronics
INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

IP Link Power Control Interface

IPL T PCS4 and IPL T PCS4i

68-738-07 **Rev. A**
03 05

Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

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Chapter One

Introduction

About This Manual

About the IPL T PCS4

Introduction

About This Manual

This manual contains information about the Extron IPL T PCS4/IPL T PCS4i Ethernet-based Power Control Interface, including explanations of how to install, configure, and operate it.

About the IPL T PCS4

The Extron IPL T PCS4/IPL T PCS4i IP Link Power Control Interface is an Ethernet-based power management device that provides the capability to control power and to schedule and monitor up to four output devices via TCP/IP. The IPL T PCS4i is an international version, configured for 220 VAC. Unless otherwise specified, "IPL T PCS4" and "PCS4" refer to both product versions throughout this manual.

The PCS4 can be used as a stand-alone control device or as one of many nodes in a distributed control system environment. It lets you remotely power on and off any attached device and to individually sample and store device power levels. The PCS4 has its own Web pages, stored in flash memory within the device.

Features

Remote powering on and off of devices — Centralized management features such as Telnet allow remote powering on and off of projectors, cameras, video conferencing equipment, switchers, and other audio/video equipment.

Power level monitoring — Four 3-prong power output receptacles sense the power level delivered. Each receptacle can sample and store power levels for a device operating in full or standby mode.

Individual power threshold settings — User-defined power thresholds can be set for each receptacle. Each threshold can be associated with one or more actions, such as activation of the alarm relay, e-mail notification, etc. When power exceeds or falls below a stored threshold, the programmed action(s) are performed.

Power-up sequencing — Power-up sequencing eliminates power surges at start-up. When the IPL T PCS4 restarts, the receptacles are powered on sequentially, separated by a user-configurable delay. (The factory default delay time is 1 second.) The attached devices are powered up in ascending order from receptacle 1 to 4.

NOTE *The IPL T PCS4 powers up only those devices that were previously powered on when the restart occurred.*

Grouping of receptacles — To support dual powered devices by controlling them simultaneously, two or more receptacles can be grouped together. Grouping and ungrouping can be done via the front panel, TCP ports using Simple Instruction Set™ (SIS™) commands, or internal Web pages.

Detection device (alarm relay) — This relay on the rear panel may be connected to a relay-controllable siren or other detection device, and can be programmed to react at specified power level thresholds. The alarm relay can be configured for either normally open or normally closed state, which activates the attached alarm device when power drops or increases beyond a specified amount. E-mail messages can be generated based on alarm relay conditions.

Internet communication — The PCS4 uses standard Ethernet and TCP/IP communication protocols, including ARP (Address Resolution Protocol), DHCP (dynamic host configuration protocol), TCP/IP (Transmission Control Protocol/Internet Protocol), Telnet, and HTTP (HyperText Transfer Protocol).

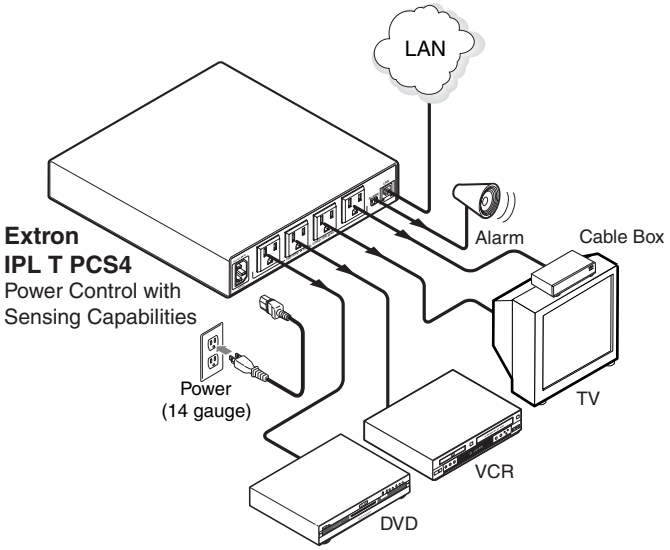
Embedded Web page serving — The IPL T PCS4 has 900 KB of internal flash memory for storing user-customizable Web pages and configuration settings. Nonproprietary programming (HTML and JavaScript™) is available, as well as other programming methods.

Security — Built-in multilevel security provides user control over access to devices attached to the PCS4. Appropriate security is provided by password protection for Administrator and User levels.

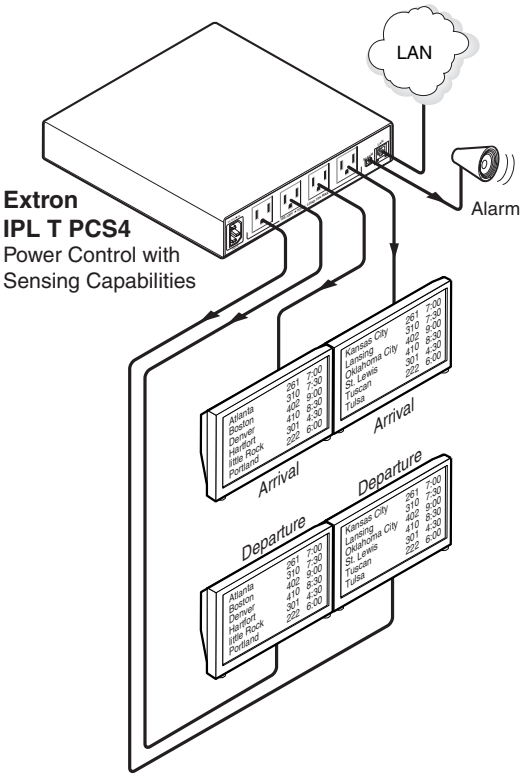
Mounting — The PCS4 can be mounted on a tabletop, for which four feet are provided and can be attached. Optional hardware for mounting the unit under a desktop or podium or on a rack shelf is not included, but may be ordered separately.

Connection diagrams

The following application diagrams show examples of how devices may be connected to the IPL T PCS4 in different environments.



Connection diagram for IPL T PCS4 (14 AWG power cord required in U. S.)



Connection diagram for IPL T PCS4 with airport digital signage

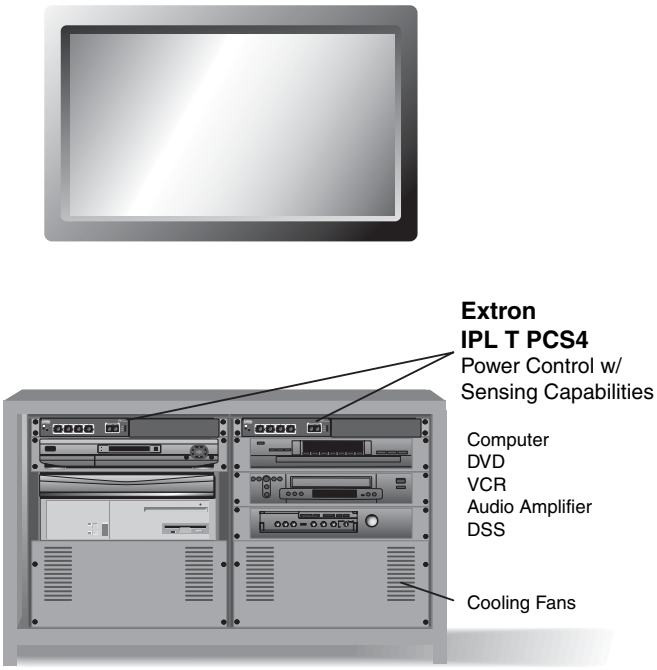


Illustration of an IPL T PCS4 in a home entertainment center

Chapter Two

Installation and Rear Panel

Installation Overview

Mounting the IPL T PCS4 Interface

Rear Panels and Cabling

Connecting the Hardware

Installation and Rear Panel

Installation Overview

To install and set up an IPL T PCS4 interface, follow these steps:

1. Turn all of the equipment off. Make sure that the video sources (DSS, cable boxes, or other devices), the IPL interface, the output devices (monitors, VCRs, projectors, etc.), and the controller are all turned off and disconnected from the power source.
2. Mount the PCS4 interface. See *Mounting the IPL T PCS4 Interface*, below.
3. Plug the PCS4 power cord into an AC outlet. For the 120 VAC version, use the supplied 14 AWG IEC power cord (part **#27-407-01**).
4. Connect an active LAN Ethernet cable to the RJ-45 port on the rear panel to establish a link to the network.
5. Set up an IP address for the PCS4. (See chapter 4, *Web Page-Based Setup and Control*, or chapter 5, *SIS™ Programming and Control*.)
6. Plug the desired devices into the power receptacles on the PCS4 rear panel.
7. Press the front panel buttons to power on the receptacles.
8. Turn on the output devices.
9. Configure the PCS4 interface through the front panel, Telnet, or the Web pages, then access the unit using an Internet browser.

Mounting the IPL T PCS4 Interface

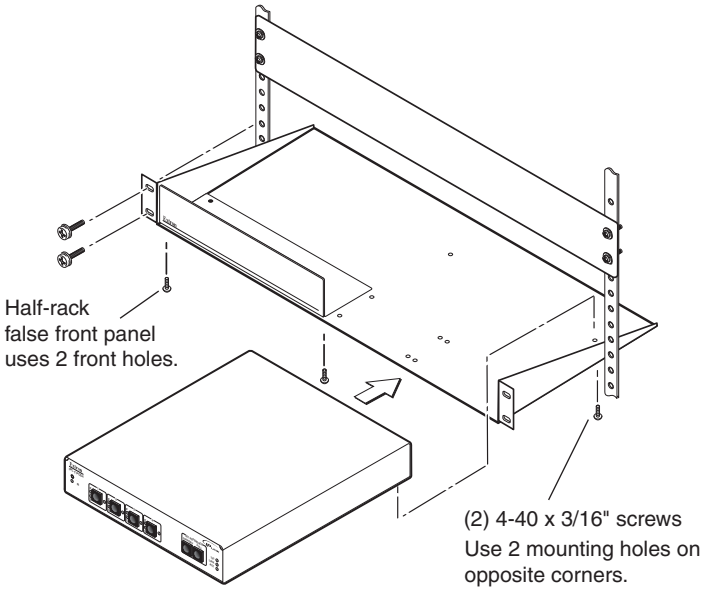
The IPL T PCS4 can be set on a table, mounted on a rack shelf, or mounted under furniture such as a desk, podium, or tabletop.

Tabletop use

Four self-adhesive rubber feet are included with the PCS4. For tabletop use, attach one foot at each corner of the bottom side of the unit, and place the PCS4 in the desired location.

Rack mounting

Rack mount the interface, if desired, using the included 19" Universal rack shelf mounting kit.

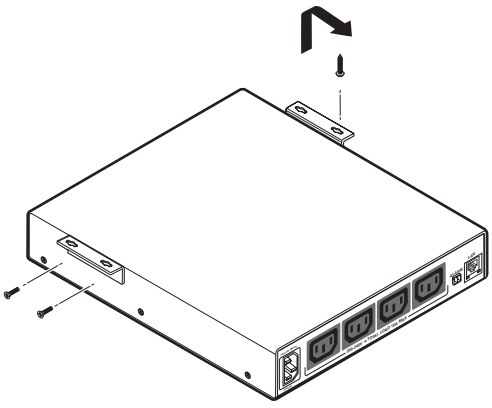


Mounting the IPL T PCS4 on a 1U Universal rack shelf

1. If rubber feet have been installed on the bottom of the unit, remove them.
2. Mount the PCS4 on the rack shelf (part #**60-190-01**), using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the unit to the shelf.
3. Attach a blank panel or other unit(s) to the rack shelf.
4. Insert the shelf into the rack, aligning the holes in the shelf with those in the rack.
5. Secure the shelf to the rack using the supplied machine screws. This shelf can be mounted in the front or in the rear of the rack.

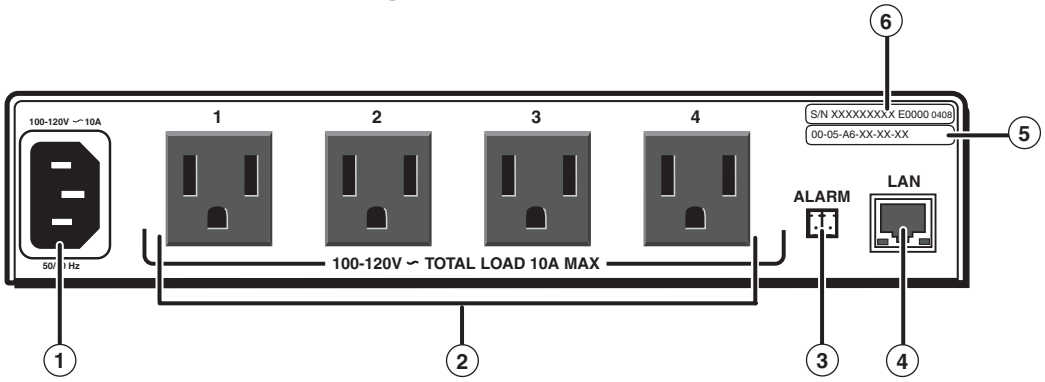
Under-desk mounting

The PCS4 can also be mounted under furniture, such as a table or podium surface, using the optional under-desk mounting brackets (part #**70-077-01**).

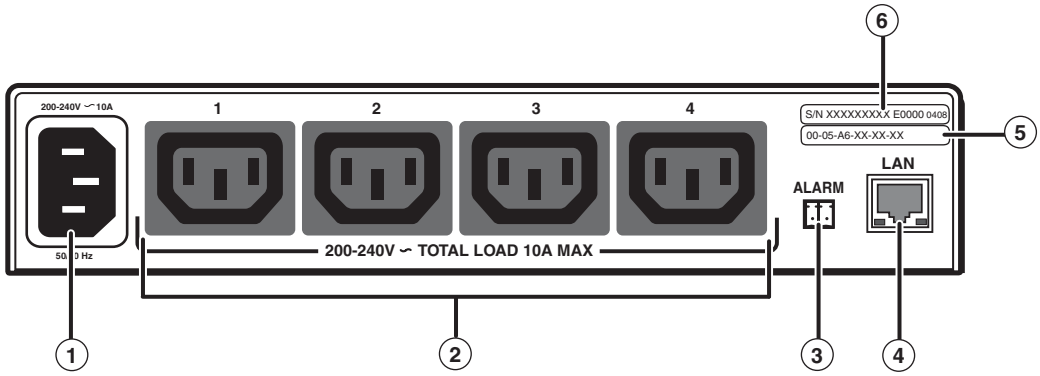


1. If rubber feet were previously installed on the bottom of the unit, remove them.
2. Attach the mounting brackets to the unit with the provided machine screws.
3. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until slightly less than ¼" of the screw protrudes.
4. Align the mounting screws with the slots in the brackets, and place the PCS4 against the surface with the screws through the bracket slots.
5. Slide the unit slightly forward or back, then tighten all four screws to secure it in place.

Rear Panels and Cabling



IPL T PCS4 rear panel (120 VAC)



IPL T PCS4i rear panel (220 VAC)

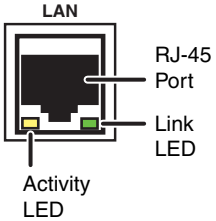
(1) **Power connector** — Connect a power cord from the AC power supply to this male IEC power input receptacle.

NOTE *For the IPL T PCS4, use the supplied 14 AWG IEC power cord (part #**27-407-01**).*

(2) **Output receptacles** — Connect power cords from up to four devices to these three-prong female Edison (IPL T PCS4) or IEC (IPL T PCS4i) power output receptacles.

(3) **Alarm relay** — Connect a relay-controllable detection device to this single-pole, single-throw relay connector. (Default condition for this relay is Normally Open.)

(4) **LAN connector and LEDs** — An Ethernet connection can be used on an ongoing basis to monitor and control the PSC4 (and the devices connected to it).



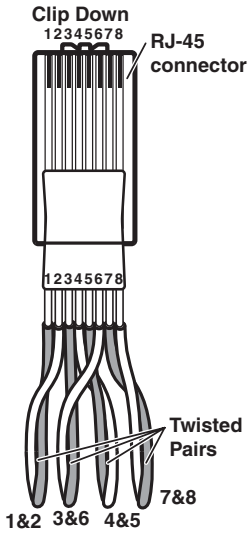
RJ-45 port — Plug a patch cable into this RJ-45 female socket, and connect the other end to a network switch, hub, router, or PC.

Link LED — This green LED lights to indicate a good network connection.

Activity LED — This yellow LED blinks to indicate network activity.

LAN port cabling

- For 10Base-T (10 Mbps) networks, use a Category 3 or better cable.
- For 100Base-T networks, use a Category 5 cable.
- Use a **straight-through cable** to connect to a switch, hub, or router.
- Use a **crossover cable** to connect directly to a PC. Wire the connector as shown in the tables below.



Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

RJ-45 connector wiring

Configuring the LAN port

You need to configure the LAN port before using it. You can configure the settings via either SIS commands or the embedded Web pages. See chapter 4, *Web Page-based Setup and Control*, or chapter 5, *SIS™ Programming and Control*, for details.

LAN port factory defaults:

- **Link speed and duplex:** Auto Detect
- **Unit IP address:** 192.168.254.254
- **Subnet Mask:** 255.255.0.0
- **Gateway IP address:** 0.0.0.0
- **DHCP:** Off

(5) **UID # label —** Contains the unique User ID number (MAC address) of the unit (for example, 00-05-A6-00-00-01). On the PCS4, the MAC address is on a label in the upper-right corner of the rear panel.

(6) **Serial number label** — Contains the serial number of your PCS4 unit.

Connecting the Hardware

Connect the cables to the rear panel as follows:

1. Plug the Ethernet cable from your network into the LAN port on the rear panel.
2. Plug the IPL T PCS4 power cord into a wall outlet. All front panel LEDs flash on briefly; only the power and Ethernet LEDs remain lit. (No receptacle lights should remain lit.)

NOTE *A label covers the power receptacle on the IPL T PCS4 (U.S. version), reminding you that you must use the supplied 14 AWG power cord for the PCS4 to function properly. Remove this label before connecting the power cord to the unit.*

3. Plug the power cord of each device to be monitored into one of the receptacles on the back panel of the PCS4.
4. If desired, connect a relay-controllable siren or other detection device to the Alarm relay on the rear panel.

NOTE *The alarm relay cannot be set up from the front panel. You must use either SIS commands or the Web pages to configure it. See* Monitoring the receptacles and setting the alarm *in chapter 4, or* Alarm relay functions *in the SIS commands table in chapter 5.*

Chapter Three

Front Panel Features and Operation

Front Panel Features

Setting up the System Using the Front Panel

Resetting the Unit

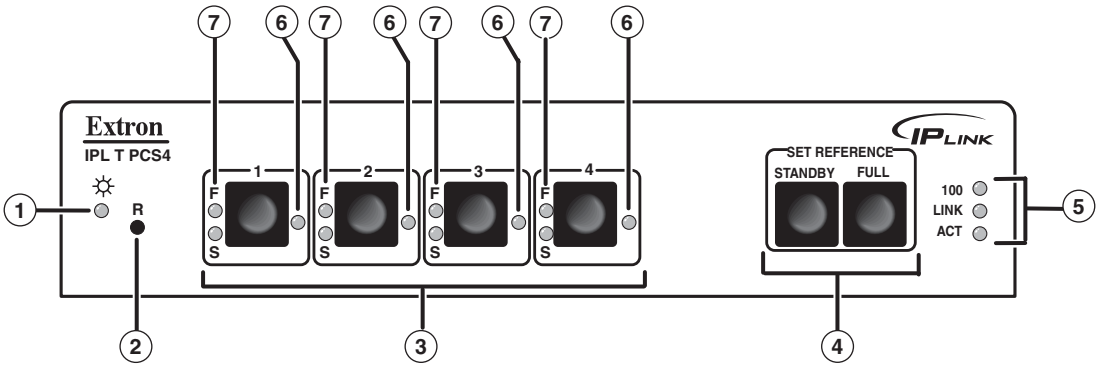
Front Panel Features and Operation

The PCS4 can be set up and operated by using:

- The front panel controls
- A computer or other device using an Ethernet connection and IP protocol (Telnet or a Web browser)

Some settings can be adjusted only through a host computer using Extron's Simple Instruction Set™ (SIS™) via Telnet, or using the PCS4's embedded Web pages. For details on setup and control via Ethernet, see chapters 4 and 5.

Front Panel Features



IPL T PCS4/PCS4i front panel

(1) **Power LED (green)** — When this green LED is lit, the PCS4/PCS4i interface is receiving power and is running.

When the unit is being reset, this LED blinks the appropriate number of times to indicate the reset mode it has entered.

(2) **Reset button (recessed)** — Use the tip of a Phillips screwdriver or an Extron Tweeker to press this recessed button to reset the unit in one of four Reset modes. See *Resetting the Unit*, later in this chapter, for details on reset modes and on using this multiple function Reset button.

(3) **Power control buttons 1-4** — Press these buttons to switch power on and off to the output receptacle with the corresponding number on the rear panel. These buttons are also used, along with the Set Reference buttons ((4)), to set the Full and Standby power thresholds.

(4) **Set Reference (Power threshold) buttons** — Press these buttons to set the indicator LEDs for each receptacle to indicate whether the attached devices is operating at Full or Standby power level.

(5) **LAN status LEDs** — These three LEDs show the status of the Ethernet connection as follows:

100 (green) — When lit, indicates a 100 Mbs connection speed. Otherwise, the connection speed is 10 Mbs.

Link (green) — Indicates that the interface has an active network connection.

Act (yellow) — (Activity) Blinks while data is being sent or received.

(6) **Power LED (red)** — (One for each receptacle) Indicates that power is being supplied to the attached device.

⑦ **Power Management (threshold) LEDs** — (Set of two for each receptacle) After the power thresholds have been set, these LEDs indicate the status of the attached device as follows:

F (green) — Indicates that power is at or above the Full reference threshold.

S (yellow) — Indicates that power is at or above the Standby reference threshold, and below the Full threshold.

Setting Up the System Using the Front Panel

The following system setup procedures can be performed using the front panel, the embedded Web pages, or the SIS commands.

This section discusses the front panel procedures. For information on using the Web to set up, see chapter 4. For the equivalent SIS commands, see chapter 5.

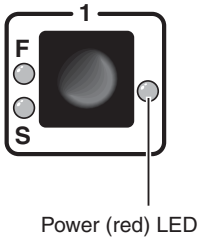
Setting up power control

To set up control of power to the devices plugged into the PCS4 receptacles, do the following for each device:

1. On the PCS4 front panel, press and release the power control button for the receptacle into which the device is plugged.

   The red Power LED at the right of the button lights and remains lit while the receptacle is powered on. It is unlit when the receptacle is powered off.

2. Power on the device, using its own power switch.



Setting power level reference thresholds

You can set the PCS4 to notify you when the power level of a connected device drops from Full to Standby or to None. For each device, you can use front panel controls to set the reference threshold (Full or Standby) at which a notification is triggered.

Until a threshold is set for a receptacle the first time, the status displayed for the receptacle on the Web page or given in response to SIS™ queries is Not Set. Once a threshold has been set, the receptacle's status defaults to None if all thresholds are cleared. (See *None threshold*, later in this chapter, for further information.)

There are two common types of power for electronic devices: **soft** and **hard**.

- **Soft power** devices normally have three power states: On, Standby, and Off. Such devices include projectors, DVD players, and VCRs.

  Example: On soft power devices, the Standby mode allows the unit to be powered to its Full power mode via RS-232 commands or a remote. Pressing a PCS4 receptacle button to Off when the receptacle is connected to a device that supports Standby power causes the device to power off.

- **Hard power** devices normally have two power states: on and off. These devices include Extron switchers and interfaces.

  Example: On Extron switchers, there is no power button or Standby condition, and the unit's power can be set only to On and Off from the PCS4 front panel. Therefore, when the power is on, it is at Full power, and can be set for Full reference threshold.

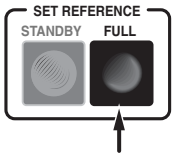
The Full and Standby reference thresholds must be configured with the device attached to the PCS4 receptacle. The thresholds must be set in the correct order, with Full being set first. Follow these steps to set the threshold for each device, using the front panel. (These thresholds also can be configured using the Web pages or SIS commands. Refer to chapters 4 and 5, respectively.)

NOTE *The **Full** threshold must be set first. If **Standby** is set first, the Standby reference setting is removed by the setting of the Full reference threshold.*

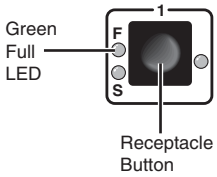
1. Connect a device to a power output receptacle on the IPL T PCS4. Make a note of the receptacle number to which you connected it (1-4).
2. Press the corresponding front panel button to activate the receptacle. Check to ensure that the receptacle's red Power LED is lit.

To set the Full power threshold:

3. Power on the attached device.
4. Press and **hold** the Full button on the PCS4 front panel.



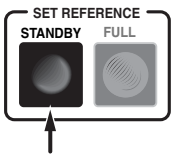
5. While holding the Full button, press and release the button for the receptacle into which the device is plugged. Both the green **F** (Full) LED and the yellow **S** (Standby) LED for the selected receptacle blink twice. Only the green Full LED remains lit.



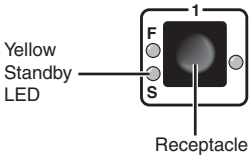
6. Release the Full button. The Full threshold for the receptacle is now set.

To set the Standby power threshold:

7. Power off the attached device.
8. Press and **hold** the Standby button.



9. While holding down the Standby button, press and release the receptacle button for the same device for which you set the Full threshold. The yellow Standby LED for the selected receptacle blinks twice and remains lit.



10. Release the Standby button.

11. Repeat steps **1** through **9** for any other receptacles to which you have connected devices to be controlled through the PCS4.

NOTE *Settings that are made via the front panel for power output receptacles and reference thresholds take approximately two minutes to be stored in memory. If you recycle power too soon after settings have been made, the settings will be lost.*

These threshold settings are preserved if the PCS4's AC power is recycled or if power is removed from an attached device. For example:

- If the receptacle is set to Full and the power level drops below the stored threshold, the receptacle's **F** (Full) LED shuts off, and the **S** (Standby) LED lights.
- If the receptacle is set to Standby and the power level drops below the stored Standby threshold, the **S** LED shuts off.
- If the receptacle is set to Standby and the power level exceeds the stored Standby threshold, the **F** LED lights.
- To indicate that the configuration has been saved, both the yellow Standby LED and the green Full LED light and remain lit when those thresholds are selected.

None and Not Set thresholds

When a Full and/or Standby reference threshold has been set for a receptacle at some time, and neither threshold is detected, a threshold status of None appears on the Web page or can be the response to SIS™ queries. None also appears if the receptacle is powered off. The None threshold is a state that is detected; it cannot be set manually.

If a receptacle has never been set to a Full or Standby reference threshold, its threshold status is shown as Not Set on the Web page and in response to SIS queries. Not Set is the default setting for reference thresholds.

Clearing thresholds

To remove the reference threshold settings from any receptacle:

1. Shut off power to the receptacle that you want to clear by pressing its button on the front panel. The red LED to the right of the button shuts off.
2. Press and hold the Standby or Full button while pressing and releasing the receptacle button. All three receptacle LEDs flash twice, indicating that the settings have been cleared.
3. Release the Standby or Full button that you were holding.

   If desired, you can now turn power for the receptacle on again by pressing the receptacle's button.

Grouping receptacles

Two or more power receptacles can be grouped so that both their connected devices can be controlled simultaneously. To group receptacles using the front panel, follow these steps for each receptacle to be grouped.

1. Place the receptacle in Configuration mode by pressing and holding its receptacle button for two seconds. The green power LED (①) flashes continually, indicating that the unit is in Configuration mode.
2. Press each receptacle button repeatedly to cycle through the available group selections, indicated by the LEDs beside the button, until you arrive at the setting you want for the receptacle:
   - No LEDs lit — No groups (The receptacle will not be part of any grouping.)
   - Yellow **S** LED lit — Group 1
   - Green **F** LED lit — Group 2
   - Red LED lit — Group 3
3. Press either the Standby or the Full button to exit Configuration mode.

Ungrouping receptacles

To remove a receptacle from a grouping, follow these steps:

1. Place the receptacle in Configuration mode by pressing and holding its button for two seconds, until the green power LED (①) flashes continually.
2. Press the receptacle button repeatedly until none of its LEDs are lit (indicating no groups).
3. Press the Standby or Full button to exit Configuration mode.

Front panel security lockout (executive mode)

When the PCS4 is in executive mode, it does not accept commands from the front panel. If any button is pressed while the unit is in executive mode, the Power LED flashes three times, indicating that input from the front panel is not being accepted.

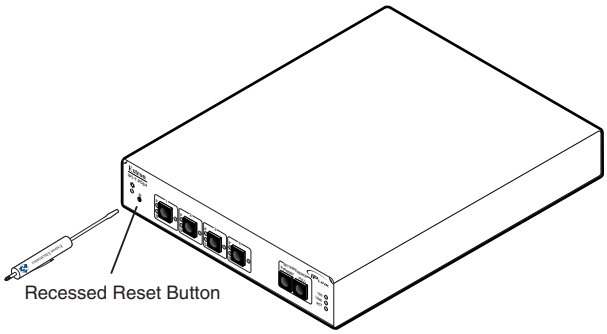
To enter or exit executive mode, press and hold the Standby and Full buttons simultaneously for 2 seconds. The Power LED flashes 3 times to indicate that the mode has been switched.

NOTE *If power to the PCS4 is recycled while the unit is in executive mode, the PCS4 remains in executive mode.*

Resetting the Unit

There are four ways to reset the PCS4 unit (called modes 1, 3, 4, and 5 for the sake of comparison with other Extron IPL products). Reset the unit by pressing the Reset button on the front panel (see *Front Panel Features* in chapter 3 for the button location). This button is recessed; it can be accessed with a pointed stylus, ballpoint pen, or an Extron Tweeker (a small screwdriver provided with the unit).

CAUTION *The reset modes described on the following pages break all TCP/IP connections by closing all sockets to the unit.*



Reset button

CAUTION *Review the reset modes carefully. Use of the wrong reset mode may result in unintended loss of flash memory programming or a unit reboot.*

NOTE *If the Reset button is continually held in, the LEDs pulse (blink) every three seconds, and the PCS4 is put in a different mode, corresponding to the underscored notes in modes 3 through 5. The mode 5 LED blinks three times, the third blink indicating that it is the last mode. The following modes are separate functions, not a progression from mode 1 to mode 5.*

Mode 1

Activation — Hold in the Reset button while applying power to the unit.

Result — Returns the unit to the default base firmware that was shipped with the PCS4 from the factory. Event scripting does not start when the unit is powered on in this mode.

Purpose and notes — Use mode 1 to remove a version of firmware if incompatibility issues arise. All user files and settings are maintained. User Web pages may not work correctly if you are using an earlier firmware version.

NOTE *After a mode 1 reset, the factory-installed firmware version remains in effect only until the unit is powered off. After a power cycle, the PCS4 returns to the firmware that was installed prior to the mode 1 reset.*

Mode 2

Mode 2 is not applicable to this product.

Mode 3

Activation — Hold the Reset button in until the Power LED blinks once (about three seconds). Release it, then immediately press it again briefly (for less than one second).

NOTE *Nothing happens if the brief press does not occur within one second.*

Result — Turns events on or off, depending on their current state. During resetting, the reset LED flashes two times if events are starting and three times if events are stopping.

Purpose and notes — This mode is used for troubleshooting.

Mode 4

Activation — Hold the Reset button in until the Power LED blinks twice (about six seconds). Release it, then immediately press it again briefly (for less than one second). The Power LED blinks four times in quick succession, confirming a mode 4 reset.

NOTE *Nothing happens if the brief press does not occur within one second.*

Result — Reset mode 4 does the following:

- Enables ARP program capability.
- Sets IP back to factory IP settings.
- Sets Subnet back to factory default.
- Sets Gateway back to factory default.
- Sets port mapping back to factory default.
- Turns DHCP off.
- Turns events off.

Purpose and notes — Mode 4 enables you to set IP address information using ARP and the MAC address.

Mode 5

Activation — Hold in the Reset button until the Power LED blinks three times (about nine seconds). Release it, then immediately press it again briefly (for less than one second). The power LED blinks four times in quick succession, confirming a mode 5 reset.

NOTE *Nothing happens if the brief press does not occur within one second.*

Result — Performs a complete reset to factory defaults (except for the firmware).

Purpose and notes — Mode 5 is useful if you want to start over with control software configuration and to replace events.

Chapter Four

Web Page-Based Setup and Control

Configuring the Hardware

Using the Embedded Web Pages

Custom Web Pages

A/V Device Power Control

Troubleshooting

Global Viewer Software

Web Page-Based Setup and Control

The IPL T PCS4 must be configured before use, or it cannot control other devices. In addition to using the buttons on the PCS4 front panel, you can configure and control the PCS4 via any computer attached to a LAN.

- The default Web pages embedded within the PCS4 provide a means to perform some setup, adjustment, and control via a Web browser from any type of network-enabled computer.
- An alternative way to control and configure the PCS4 from your computer is by using Simple Instruction Set (SIS) commands via Telnet or a Web browser. SIS commands are discussed in detail in chapter 5.

Configuring the Hardware

To function together, both the PC and the PCS4 must be configured correctly. The PC must be network-capable with the proper protocols, and the PCS4 must be set up so it can be connected to a LAN (local area network). Please note that some settings can be configured only via Internet protocol.

For your PC to communicate with the PCS4, it must have a Windows-based (Windows NT, 2000, XP, or higher) operating system and be equipped with an network interface card. To allow your PC to work with Extron's Ethernet-controlled products, the TCP/IP protocol must be installed and properly configured.

Setting up and configuring the PC using ARP

The Address Resolution Protocol (ARP) command provides a quick way to set up an IP address for the PCS4, using your PC. The ARP commands tell your computer to associate the PCS4's Media Access Control (MAC) address with an IP address that you assign. After entering the ARP command, you enter a *ping* command to access the PCS4, at its new address to confirm the address has been successfully changed.

1. Obtain a valid IP address for your PCS4 from your network administrator.
2. Obtain the PCS4's MAC address (UID#) from the label on its rear panel. The MAC address should have the following format:

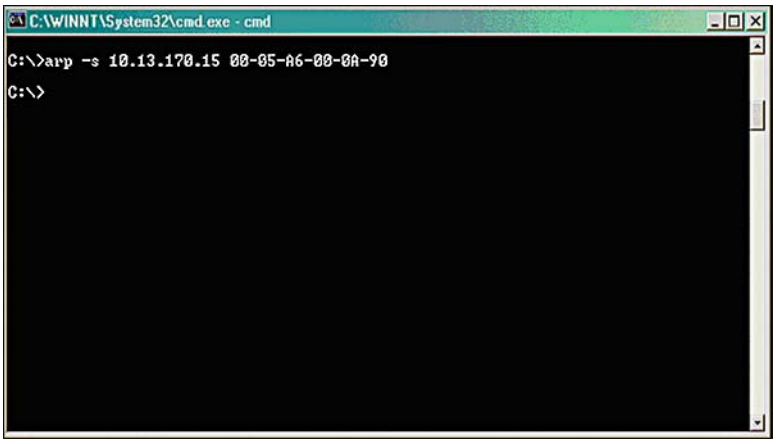
   00-05-A6-*nn-nn-nn*

3. If the PCS4 has never been configured and is still set for factory defaults, skip to step 4. If not, perform a mode 4 system reset to restore the factory-set values. (See *Resetting the Unit*, in chapter 3, for the resetting procedure.)

   CAUTION *The PCS4 must be configured with the factory default IP address (192.168.254.254) before you execute the ARP command, as described below.*

4. At the PC, access the MS-DOS command prompt, then enter **arp -s**, the desired new IP address for the PCS4, a space, and finally the PCS4's MAC address (taken from the label on the rear panel). For example:

   arp -s 10.13.170.15 00-05-A6-00-0A-90



ARP-S command screen

NOTE *After the* arp -s *command is issued, the PCS4 changes to the new address and starts responding to* ping *requests, as described in the next step.*

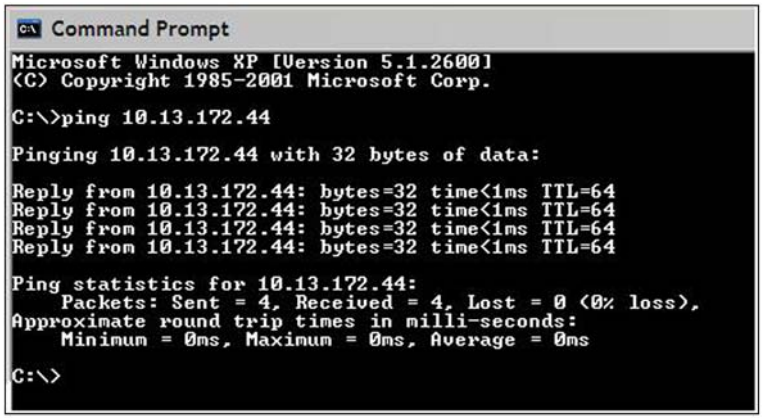
5. To verify that the new address has been set, execute a *ping* command by entering "ping," followed by the new IP address, at the command prompt.

NOTE ***Ping*** *is a utility or diagnostic tool that tests network connections. It is used to determine if the host has an operating connection and is able to exchange information with another host.*

Example:

ping 10.13.170.15

The response should be the PCS4's new IP address, as shown below.



Screen showing the Ping command

You can reconnect using either Telnet or a Web browser to verify that the update was successful.

6. After verifying that the IP address change was successful, issue the *arp -d* command at the DOS prompt to remove the address from the ARP table. For example:

arp -d 10.13.170.15

Setting up and configuring the PC using a Web browser

To set up the PCS4 using a Web browser, you must temporarily configure the PC to communicate with the interface. Then you can change the PCS4's default settings (IP address, subnet mask, and [optionally] administrator name and password) in order to use the unit on an intranet (LAN) or on the Internet (WAN). After you have set up the PCS4 for network communication, you can reset the PC to its original network configuration.

IPL T PCS4's LAN port defaults:

- **PCS4's IP address:** 192.168.254.254
- **Gateway's IP address:** 0.0.0.0
- **Subnet mask:** 255.255.0.0
- **DHCP**: Off
- **Link speed and duplex level:** Auto detected

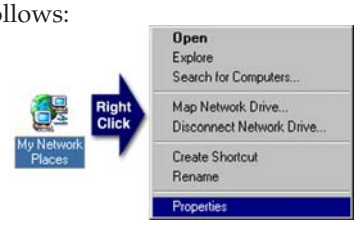
If you use an existing Ethernet LAN intranet, your network administrator can provide you with a unique IP address for the PCS4 or confirm whether you need to set up the PCS4 for DHCP (Dynamic Host Configuration protocol) to have an address assigned automatically when you sign on.

Setting up the PC for IP communication

Follow these steps to set up communication between your PC and the PCS4. (The illustrations in this section show screens from Windows 2000. Your screens may appear slightly different.)

1. Open the Network Connections page as follows:

   Windows 2000:

   a. Locate and right-click My Network Places on the Windows desktop.

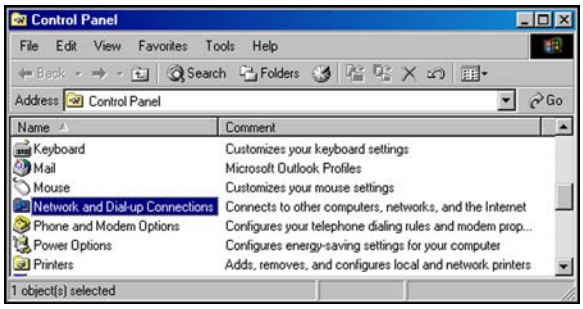
   b. Select Properties.

   or

   a. Click the Start menu, and select Settings (if necessary).

   b. From the Start menu, select Control Panel.

   c. On the Control Panel window, double-click Network Connections, then Dial-up Connections (if necessary).

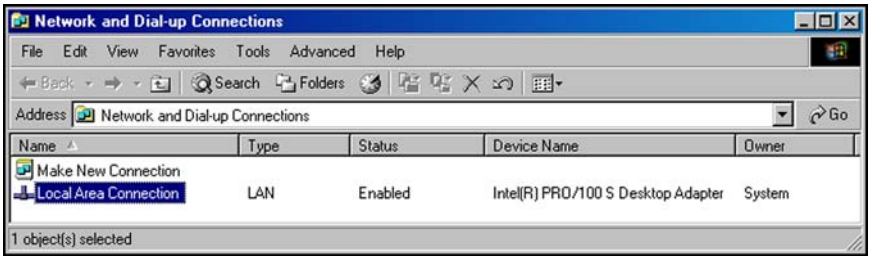


   Windows XP:

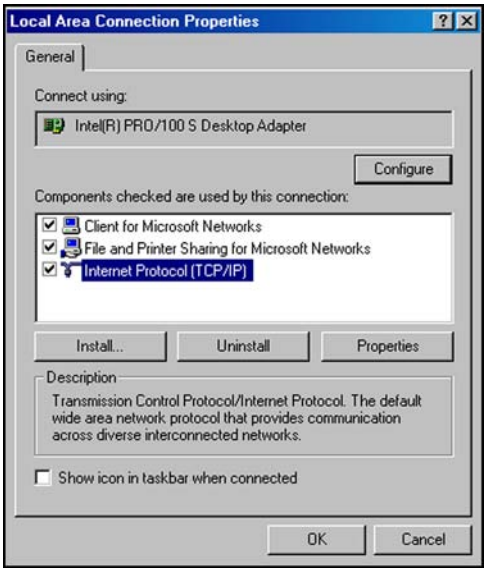
   a. From the Start menu, select My Network Places.

   b. From the Network Tasks side-bar menu, select View Network connections.

2. Right-click Local Area Connection, then select Properties.


Network and Dial-up Connections
File Edit View Favorites Tools Advanced Help
Back Search Folders
Address Network and Dial-up Connections
Go
Name Type Status Device Name Owner
Make New Connection
Local Area Connection LAN Enabled Intel(R) PRO/100 S Desktop Adapter System
1 object(s) selected

3. Select Internet Protocol (TCP/IP), and click the Properties button. If Internet Protocol (TCP/IP) is not on the list, it must be added (installed). Refer to the Windows user's manual or the Windows online help system for information on how to install the TCP/IP protocol.


Local Area Connection Properties
General
Connect using:
Intel(R) PRO/100 S Desktop Adapter
Configure
Components checked are used by this connection:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
Internet Protocol (TCP/IP)
Install... Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in taskbar when connected
OK Cancel

4. Write down your PC's current IP address and subnet mask below. You will need to restore these settings to the PC later.

   If **Obtain an IP address automatically** has been selected, make a note of that. If not, write down the following:

   IP address:

   _____

   Subnet mask:

   _____

5. Change the PC's IP address temporarily so that it can communicate with the PCS4.

   a. Select the "Use the following IP address:" radio button.

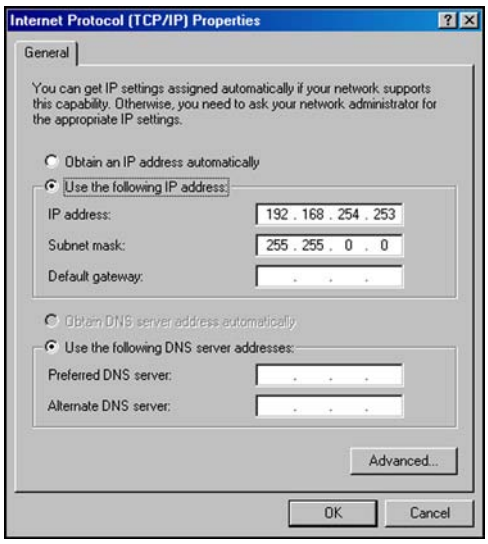
b. Enter the following values as shown below:

IP address: **192.168.254.253**

Subnet mask: **255.255.0.0**

Default gateway: **Blank** or **0.0.0.0**

(The temporary IP address differs from the PSC4's factory default by one digit.)


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 254 . 253
Subnet mask:
255 . 255 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

c. Click OK to save the changes, and exit the network setup.

d. Reboot the PC, if required, for the changes to become effective.

6. Plug one end of a Category 5 network/Ethernet crossover cable into the Ethernet (LAN) connector on the PCS4 rear panel. (Refer to chapter 2, *Installation and Rear Panel*, for information on the RJ-45 LAN connector wiring.) Plug the other end of the Ethernet cable into the Ethernet port on the PC.

NOTE *If you are using a network hub or switch between the PC and the PCS4, use a* ***straight-through*** *Category 5 cable instead of a crossover cable.*

7. Set up the PCS4's IP address. See *Configuring the IPL T PCS4 using a Web browser*, in the next section, for the procedure.

Once the PCS4 has been reconfigured, an Ethernet (intranet or Internet) connection can subsequently be used to configure or control it.

NOTE *Both your computer and the PCS4 must be connected to the same LAN. Alternatively, you may use a crossover Ethernet cable to connect the interface directly to your computer's Ethernet card.*

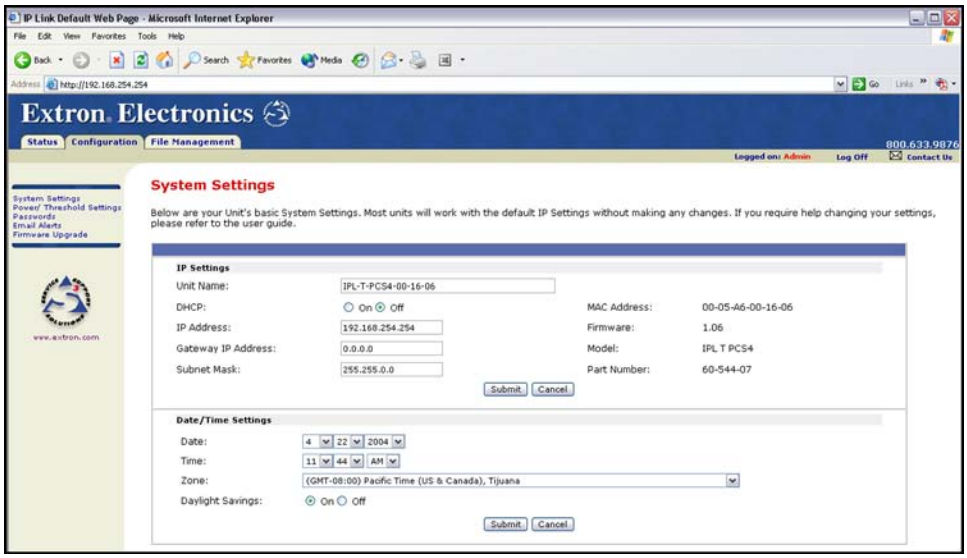
8. After setting the PCS4's IP address, restore the PC's previous IP configuration by following steps **1**, **2**, **3**, and **5** but using the PC's original IP address settings that you wrote down in step **4**.

Configuring the IPL T PCS4 using a Web browser

The default Web pages that are preloaded on the PCS4 are compatible with popular Web browsers such as Internet Explorer (version 5.5 or higher).

NOTE *The following instructions assume that you have already configured the Windows-based PC, connected it to the PCS4's LAN port, and powered on the interface.*

1. Obtain a valid IP address, subnet mask, and gateway address for the PCS4 from your network administrator.
2. Launch a Web browser (such as Internet Explorer) on the connected PC (for which you set up the network configuration earlier), and enter the PCS4's default address, **http://192.168.254.254**, in the address box. The PCS4's default Web page is displayed.
3. Select the Configuration tab, then select System Settings from the side bar menu on the left of the screen. A configuration System Settings Web page appears. A typical settings screen is shown below.



Example of a default system settings page

4. IP, gateway, and subnet mask addresses follow standard naming and numbering conventions and protocol (xxx.xxx.xxx.xxx). The IP network administrator should provide the addresses to be used with this interface.

   Enter the new IP address assigned for the PCS4, the corresponding subnet mask, and gateway address, then click Submit.

   The PSC4 takes approximately two minutes to store the new settings. Once the interface's IP address is changed, your PC loses communication with the PCS4, and a screen appears, indicating that the page cannot be displayed.
5. Close the browser.
6. After changing the PCS4's IP settings, change your PC's TCP/IP settings back to their original configuration, and reboot if necessary. You are now able to access the PCS4's web pages to configure the front panel.

Using the Embedded Web Pages

The PCS4 features an embedded Web server, which includes factory set Web pages. These pages can be replaced with user-designed files, but the default Web pages provide many basic features for monitoring, configuring, and controlling the PCS4 via a Web browser. This section provides an overview of the embedded Web pages.

To access the embedded Web pages:

1. Launch a Web browser (e.g., Internet Explorer) on your connected PC.
2. On the browser's Address line, enter the PCS4's IP address. If a password has been set, the Enter Network Password dialog box opens.

   If no password has been set, the PCS4 Web page opens, displaying the System Status tab. (Skip steps **3** and **4**.)
3. In the User Name field on the password window, enter text of your choice, or leave the User Name blank.

4. Enter the administrator password in the Password field, and click OK. The PCS4 Web page is displayed.

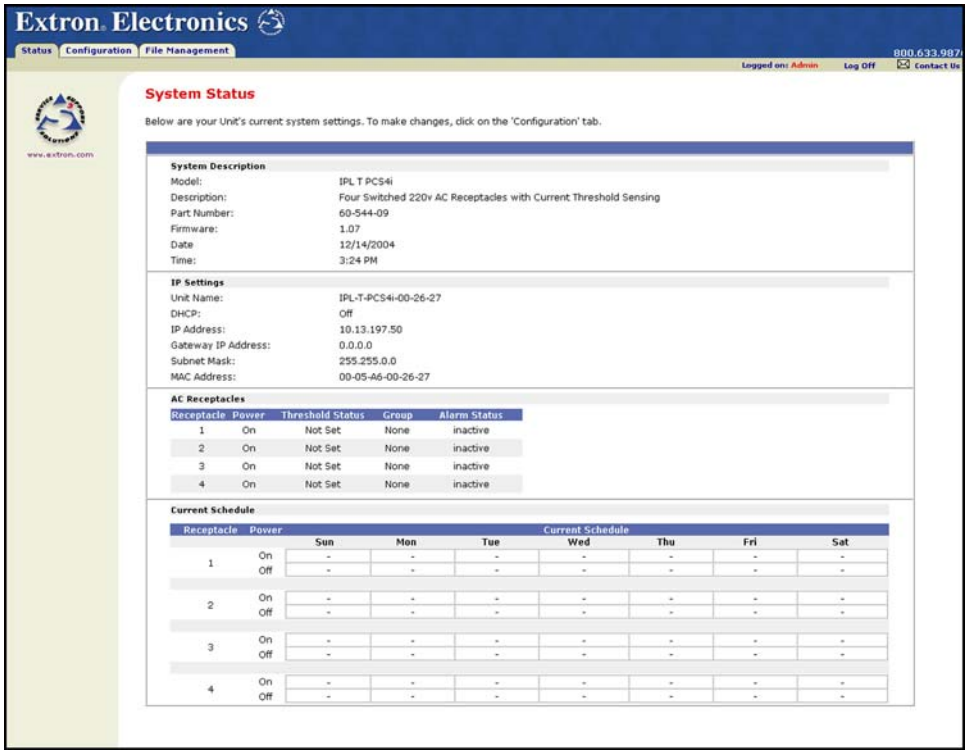
NOTE *Passwords must contain 4 to 12 alphanumeric characters. Symbols and spaces are not allowed, and the passwords are case sensitive.*

NOTE ***Administrators*** *have access to all of the Web pages and are able to make changes to settings.* ***Users*** *can access only the* System Status *page.*

Viewing the system status

The System Status Web page on the Status tab provides information on the current settings. Changes must be made via the Configuration Web pages or SIS programming commands (see chapter 5, *SIS Programming and Control*). Personnel who have user access can view this page but cannot access the Configuration or File Management tab pages to make changes.

The following figure shows an IPL T PCS4 System Status web page.



System Status Web page

The System Status page displays information in the following categories:

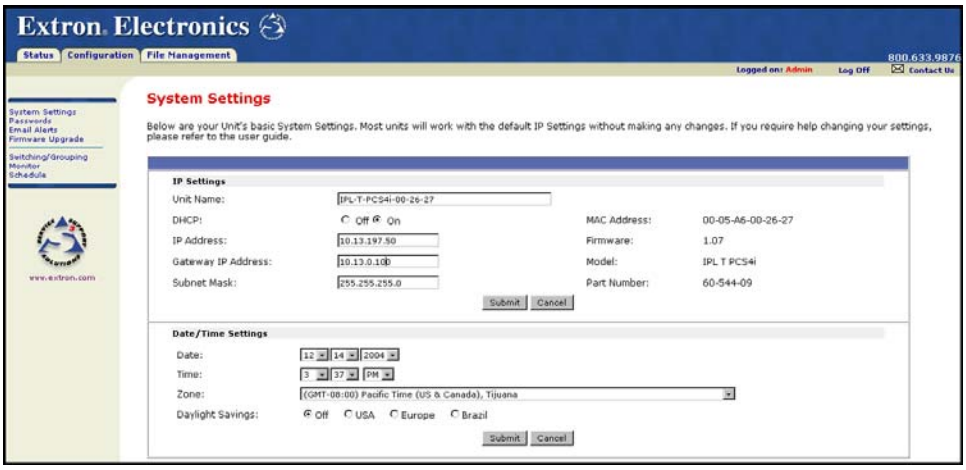
- **System Description:** Includes product model, a brief description, part number, and firmware version, plus the current date and time.
- **IP Settings:** Displays the unit's name, IP address, MAC address, and all other current IP settings.
- **AC Receptacles:** For each receptacle, shows whether the receptacle is turned on or off; the current power level threshold setting (Full, Standby, Not Set, or None); whether the receptacle is part of a group; and the alarm state.
- **Current Schedule:** Shows the day of the week and the time that any receptacle has been scheduled to power on and off.

Configuration

There are seven Configuration Web pages, which only administrators can access. They are listed in the side-bar menu at the left of the Configuration screen. The following sections discuss the tasks that you can perform on these screens.

Specifying system settings

On the System Settings screen, you can set the date and time, and change the IP address information for the PCS4. To change the available system settings, follow these steps:



System Settings screen on the Configuration tab

1. On the Configuration tab, select System Settings from the side-bar menu at the left edge of the screen. The System Settings screen appears, displaying either the factory default information for your PCS4, or the settings submitted most recently.
2. Enter your new information in the IP Settings section or select the date and time from the menus in the Date/Time Settings section.

IP settings

The following settings are available in the IP Settings section:

- **Unit Name:** The default is the product name followed by the last six digits of the MAC address. You can give the unit a new name (such as "LigntsOn&Off" or "BoardroomA-PCS4") consisting of up to 24 alphanumeric characters including the hyphen (-).

  NOTE *The first character must be an alpha character, and the last character **cannot** be a hyphen. The unit name is not case-sensitive.*

- **DHCP:** DHCP is a communications protocol that assigns addresses on the local network automatically. Select the On or Off radio button to enable or disable DHCP.
- **IP Address:** You can enter a new network address consisting of four sets of up to three digits, separated by periods (xxx.xxx.xxx.xxx).

- **Gateway IP Address:** A gateway is a device that connects your network with others that may be using different, incompatible communications protocols. You can enter your gateway's address (obtained from your network administrator), using the same format that is used for the IP Address. (If there is no gateway, this field defaults to 0.0.0.0.)
- **Subnet mask:** The subnet mask is used to split IP networks into a series of subgroups (subnets). The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets. You can enter a new subnet mask address using the same format that is used for the IP Address.

Date and time settings

The following settings are available in the Date/Time Settings section.

NOTE *This section lets you set the date and time on your PCS4 unit. However, the passage of time is not reflected in the Date and Time fields on the Web page. The screen continues to display the settings you entered and does not increment them as time passes. However, the PCS4 itself continues to keep the correct time internally, enabling you to schedule power on and off for the receptacles.*

- **Date:** Select month, day, and/or year from the pull-down menus.
- **Time:** Select hours, minutes, and/or AM or PM from the pull-down menus.
- **Zone:** From the pull-down menu, select the time zone for the PCS4's location (number of hours offset from Greenwich mean time).
- **Daylight Savings:** Daylight savings time (DST) is a one-hour offset that is observed in some countries. You can select a radio button to set the PCS4 for daylight savings time for the U. S., Europe, or Brazil; or select Off to disable it.

  The following daylight savings periods are observed:

  - **U. S.** — Starts the first Sunday in April and ends the last Sunday in October.
  - **Europe** — Starts the last Sunday in March and ends the last Sunday in October.
  - **Brazil** — Starts the first Sunday in October and ends the third Sunday in February. (Equatorial Brazil does not observe DST.)

3. When you have made all the desired changes in one section, click the Submit button at the bottom of the section. The new IP settings are displayed at the right of the fields in which you entered them. The new date and time settings are displayed in the fields in which you entered or selected them.
4. Follow steps **2** and **3** to make changes in the other section, if desired.

Clicking Cancel in either section restores the previous settings, if the values you entered have not been submitted.

Assigning passwords

The Passwords screen allows you to assign passwords to the Administrator and User access levels. The Administrator password gives access to all IPL T PCS4 Web pages, enabling the administrator to configure the PCS4.

The User password provides access only to the System Status Web page. If you are logged in as User, you see only the Status tab with the System Status screen. You cannot make any configuration changes.

To assign passwords:

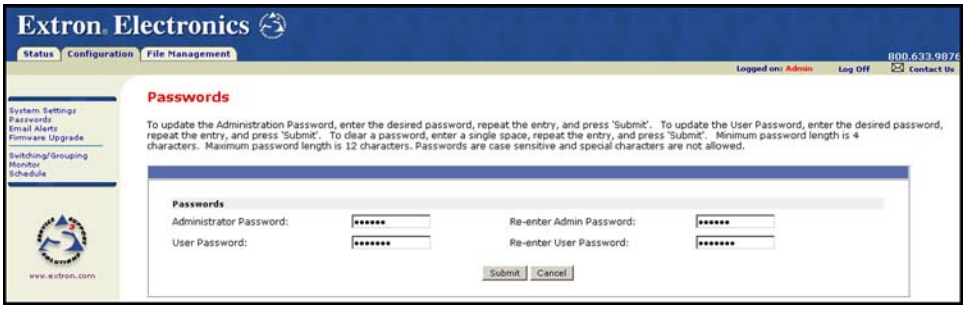
1. On the Configuration tab, select Passwords from the side-bar menu.
2. Enter the new administrator password in the Administrator Password field.

NOTE *Passwords must contain 4 to 12 alphanumeric characters. Symbols and spaces are not allowed, and the passwords are case sensitive.*

3. In the Re-enter Admin Password field, enter the same password again to confirm it.
4. If you want to assign a User password, enter it in the User Password field.

NOTE *You cannot assign a User password unless an Administrator password has either been assigned or is being assigned at the same time.*

5. Re-enter the same User password in the Re-enter the User Password field.


Extron Electronics
Status
Configuration
File Management
800.633.9876
Logged on: Admin
Log Off
Contact Us
System Settings
Passwords
Email Alerts
Firmware Upgrade
Switching/Grouping
Monitor
Schedule
www.extron.com
Passwords
To update the Administration Password, enter the desired password, repeat the entry, and press 'Submit'. To update the User Password, enter the desired password, repeat the entry, and press 'Submit'. To clear a password, enter a single space, repeat the entry, and press 'Submit'. Minimum password length is 4 characters. Maximum password length is 12 characters. Passwords are case sensitive and special characters are not allowed.
Passwords
Administrator Password:
Re-enter Admin Password:
User Password:
Re-enter User Password:
Submit
Cancel

Passwords screen with Administrator and User passwords entered

6. Click Submit to set the password(s).

Removing passwords

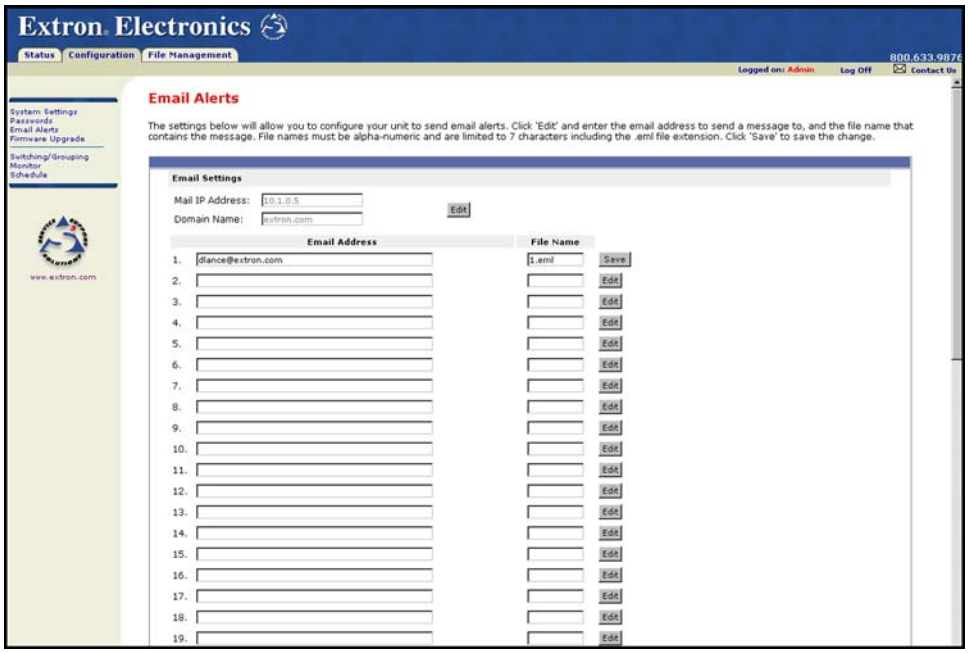
To remove a password, follow these steps:

1. Access the Passwords screen on the Configuration tab.
2. In the Administrator Password and/or the User Password field, delete the characters that are there, and press the Spacebar to enter a space.
3. Repeat step 2 in the Re-enter Admin Password and/or the Re-enter User Password field.
4. Click Submit.

NOTE *Deleting the Administrator password also deletes the **User** password.*

Entering e-mail addresses for alerts

If you have created scheduled events or monitoring tasks on the PCS4, you can write an e-mail alert with a message corresponding to that event or task (e.g., a change in power level for one of the attached devices). The e-mail alert can notify up to 48 recipients at one time; the Email Alerts screen lets you enter up to 48 e-mail addresses.



E-mail Alerts screen (upper portion)

To edit notification e-mail addresses, follow these steps:

1. On the side-bar menu on the Configuration tab, click Email Alerts.
2. On the Email Alerts screen, click the Edit button located to the right of the Mail IP Address and Domain Name fields. The screen goes into Edit mode, and the Edit button changes to Save.
3. Enter your mail server's IP address and your domain name in the appropriate fields. (This information is available from your network administrator.)
4. Click Save to save the information.
5. Click the Edit button at the end of the first address row in which you want to enter a new address or edit the existing one. The Edit button changes to Save (see the illustration above).
6. Enter the alert recipient's e-mail address in the numbered box under Email Address.
7. In the File Name column, enter the name (seven characters maximum) of the file containing the alert message. The message file name must have the extension **.eml**.

NOTE *Due to the seven-character limit for full file names, it is recommended that you use numeric file names (e.g., 1.eml, 24.eml, etc.). Numeric titles reduce the characters in the file name and assist in keeping the alert files organized. However, alphabetic titles are permitted.*

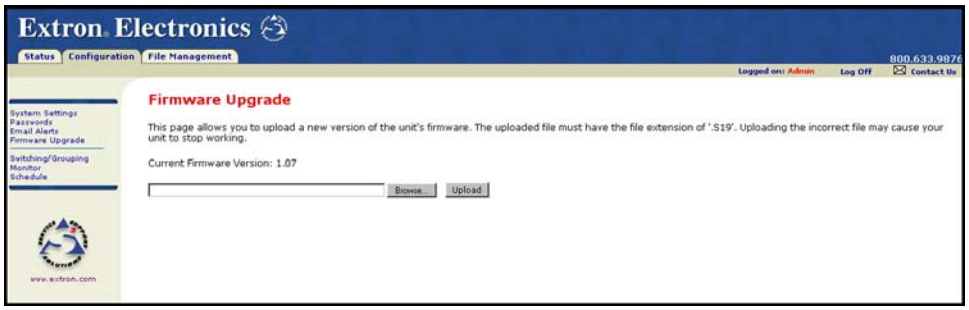
8. Click the Save button beside the file name that you entered. The e-mail alert information is saved on the PCS4, and the Save button becomes Edit again.

9. Repeat steps **5** through **8** for each e-mail recipient address that you want to add or edit.

Upgrading firmware

The Firmware Upgrade screen lets you browse to locate and upload a new version of firmware for your unit. The uploaded file must have the file extension **.S19**.

NOTE *The PCS4's .S19 file is not the same as the .S19 files of other products and is not interchangeable with any other product's firmware upgrade files.*



Firmware upgrade screen

To upload a new version of firmware:

1. On the side-bar menu of the Configuration tab, click Firmware Upgrade. The Firmware Upgrade screen is displayed, showing the version of firmware that is currently loaded.

2. Click Browse to open a Windows file selection window.

3. On the file selection window, locate the new firmware version file on your server and double-click it. (Firmware files must have the extension .S19.) The firmware file name and path are displayed in the Current Firmware Version field on the Firmware Upgrade screen.

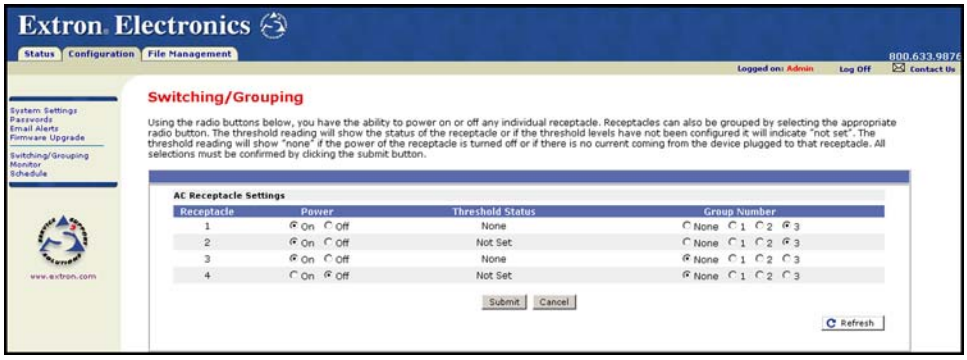
4. Click Upload. When the firmware upgrade is complete, the Power LED on the unit blinks three times.

NOTE *If you attempt to upload a file with an extension other than .S19, the PCS4 recognizes it as invalid and ignores it, reverting to the factory installed firmware version.*

Managing receptacles

On the Switching/Grouping screen, you can switch power on and off to each individual receptacle, group the receptacles together, and power each group on and off. You can also view the threshold settings (Full, Standby, None, or Not Set) indicating the device power level at which the alarm relay will be activated for each receptacle.

NOTE *You cannot* ***set*** *the reference thresholds on this screen. This can be done only from the IPL T PCS4 front panel or via SIS commands. Refer to* Setting power level reference thresholds *in chapter 3 or to chapter 5,* SIS™ Programming and Control, *for information on setting thresholds from the front panel or via SIS commands.*


Extron Electronics
Status
Configuration
File Management
Logged on: Admin
Log Off
Contact Us
System Settings
Passwords
Email Alerts
Firmware Upgrade
Switching/Grouping
Monitor
Schedule
www.extron.com
Switching/Grouping
Using the radio buttons below, you have the ability to power on or off any individual receptacle. Receptacles can also be grouped by selecting the appropriate radio button. The threshold reading will show the status of the receptacle or if the threshold levels have not been configured it will indicate "not set". The threshold reading will show "none" if the power of the receptacle is turned off or if there is no current coming from the device plugged to that receptacle. All selections must be confirmed by clicking the submit button.
AC Receptacle Settings
Receptacle
Power
Threshold Status
Group Number
1 On Off None None 1 2 3
2 On Off Not Set None 1 2 3
3 On Off None None 1 2 3
4 On Off Not Set None 1 2 3
Submit
Cancel
Refresh

Switching/Grouping screen

Switching power to receptacles on and off

To turn power to receptacles on and off:

1. On the Configuration tab, select Switching/Grouping from the side-bar menu.
2. In the Power column, select the On or Off radio button beside the number of each receptacle that you want to switch. If you want to switch a group of receptacles, select On or Off for **one** of the receptacles in that group. (See *Grouping receptacles*, below.)
3. Click Submit to put your changes into effect.

NOTE *If you turn power on by pressing the receptacle button on the front panel while this screen is displayed, the screen does not change to reflect your actions until you click Refresh.*

Grouping receptacles

You may want to group two or more receptacles together to ensure that they are switched on or off at the same time. You can create up to three groups. To group receptacles, follow these steps:

1. Locate the number of the first receptacle that you want to group.
2. In the Group Number column, select the radio button for the group number (1, 2, or 3) to which you want to assign the receptacle.
3. Repeat steps **1** and **2** for the rest of the receptacles that you want to group with the first one.
4. When you have made all desired grouping selections, click Submit.

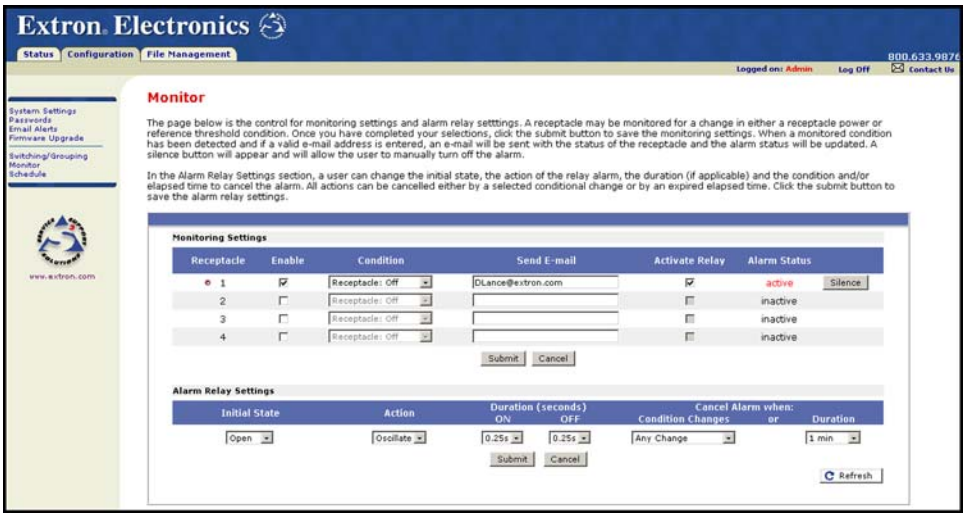
NOTE *After receptacles have been grouped, any power selection that you make for one of the grouped receptacles is also performed on the others in that group when you click Submit.*

If you do not want to group a receptacle with any others, select None for it.

Monitoring the receptacles and setting the alarm

The Monitor screen on the Configuration tab lets you monitor each receptacle for any change in its power or its reference threshold condition (full or standby power). You can also configure the alarm relay and set up the alarm to sound and/or an e-mail notification to be sent out if any condition at a receptacle changes.

This screen is updated continually. In addition, you can update it by clicking Refresh. Refresh also removes any settings that have been entered but have not been submitted, and returns the entire screen to the settings that were saved previously.


Extron Electronics
Status
Configuration
File Management
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Logged on: Admin
Log Off
Contact Us
System Settings
Passwords
Email Alerts
Firmware Upgrade
Switching/Grouping
Monitor
Schedule
www.extron.com
Monitor
The page below is the control for monitoring settings and alarm relay setttings. A receptacle may be monitored for a change in either a receptacle power or reference threshold condition. Once you have completed your selections, click the submit button to save the monitoring settings. When a monitored condition has been detected and if a valid e-mail address is entered, an e-mail will be sent with the status of the receptacle and the alarm status will be updated. A silence button will appear and will allow the user to manually turn off the alarm.
In the Alarm Relay Settings section, a user can change the initial state, the action of the relay alarm, the duration (if applicable) and the condition and/or elapsed time to cancel the alarm. All actions can be cancelled either by a selected conditional change or by an expired elapsed time. Click the submit button to save the alarm relay settings.
Monitoring Settings
Receptacle
Enable
Condition
Send E-mail
Activate Relay
Alarm Status
1
Receptacle: Off
DLance@extron.com
active
Silence
2
inactive
3
inactive
4
inactive
Submit
Cancel
Alarm Relay Settings
Initial State
Action
Duration (seconds)
ON
OFF
Cancel Alarm when:
Condition Changes
or
Duration
Open
Oscillate
0.25s
0.25s
Any Change
1 min
Submit
Cancel
Refresh

Monitor screen

To set up receptacle monitoring and configure the alarm, follow these steps:

1. On the side-bar menu on the Configuration tab, click Monitor.
2. In the Monitoring Settings and/or Alarm Relay Settings section, enter your selections (described in the following sections).
3. When you are finished making selections in one section, click the Submit button at the bottom of the section to implement your changes. (If you want to undo all the entries you made in this section, click Cancel instead of Submit.)

Monitoring Settings section

In this section, you can specify the following settings for each receptacle by making selections in the row beside its number.

- **Enable:** Select this check box to initiate monitoring of the receptacle. If this box is not selected, all the other fields in the row are grayed out and you cannot enter settings for the receptacle.
- **Condition:** From the pull-down menu, select the condition that will be monitored. Options include receptacle or device power on or off; Full, Standby, or None power threshold levels; or any change in conditions at the receptacle.
- **Send E-mail:** Enter an e-mail address to which the PCS4 will send a preconfigured notification if the selected condition is met.

- **Activate Relay:** Select this check box to specify that the relay alarm will sound (activate) if the selected condition is met. If this box is not selected, any changes you make to the alarm relay settings are ignored.
- **Alarm status:** Indicates whether or not the PCS4 has detected the condition that is being monitored. This column can display the following:
  - **inactive** — Appears when the receptacle is not being monitored, or the condition being monitored has not been detected.
  - **active** — Appears in red when the PCS4 detects the condition for which the receptacle is being monitored. In addition, a Silence button appears at the right of the status, and a pulsing red light icon appears by the number of the receptacle for which the condition was met.
  - **silenced** — Appears in red when you click the Silence button to clear the monitored condition. In addition, the pulsing red light icon is replaced by an exclamation point icon (!).

  To reset the alarm status, deselect and reselect the Enable check box for the receptacle being monitored, then click Submit. The Alarm Status column displays "inactive" again and the **!** icon is removed.

Alarm Relay Settings section

In this section, you can configure the alarm relay by making selections in the following fields.

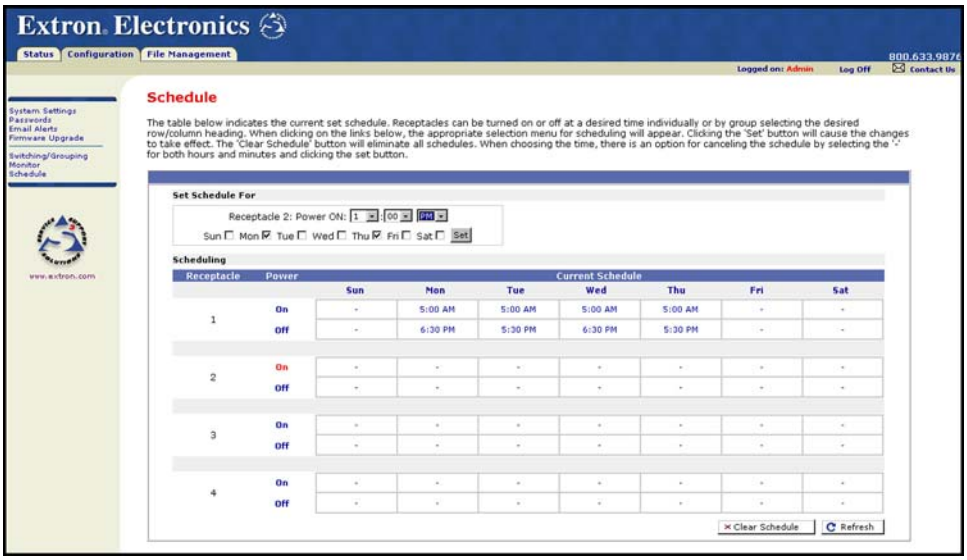
NOTE *The Activate Relay check box must be selected for these settings to take effect.*

- **Initial State:** Select Open or Closed from the pull-down menu for the initial state of the alarm relay. (The default is Open.)
- **Action:** From the pull-down menu, select the way in which the alarm will respond when activated. This depends on the Initial State setting of the relay (see the table below).
  - **Activate** — Steady tone if the relay's initial state is set to On. If the initial state is set to Off, this option turns the alarm relay off.
  - **Pulse** — Alarm turns on for the selected duration of seconds, then stops.
  - **Oscillate** — The alarm is on for a specified duration of seconds, then off for a specified period, producing an intermittent tone.
- **Duration (seconds):** From the pull-down menus, select the length (in seconds) of the alarm tone action selected in the Action field (Pulse or Oscillate only).
  - For Pulse, you can set the length of the single tone (On field).
  - For Oscillate, you can set the length of the repeating tone (On field) and the amount of time between tones (Off field).
- **Cancel Alarm when:** From one of the following menus, select the condition that will stop the alarm tone.
  - **Condition Changes** — Select the type of change in conditions that will make the alarm stop sounding. (Selecting Manual specifies that the tone will not stop without user intervention via the front panel, the powered device, or SIS commands.)
  - **Duration** — Select the number of minutes the alarm will continue to sound before it shuts off.

Scheduling power to receptacles

The Schedule screen on the Configuration tab lets you schedule when power to the receptacles is turned on and off. You can schedule receptacles individually to turn on or off at desired times, or you can select a group of receptacles to turn on or off at one time. Clicking the Clear Schedule button deletes all schedules. You may want to set up your schedule for a week at a time, or a day at a time.

To access the Schedule screen, click Schedule on the side-bar menu on the Configuration tab.



Schedule screen showing field for individual receptacle scheduling

Scheduling an individual receptacle

To schedule power on and off to an individual receptacle, follow these steps:

1. Locate the number of the receptacle that you want to schedule, and click On or Off in the Power column beside it. A Set Schedule For field opens, displaying the selected receptacle number, the power selection (On or Off), and menus from which to select the hour, minute, and AM/PM. (The illustration above shows the Schedule screen with a Set Schedule For field displayed for receptacle 2, with power ON at 1:00 p.m. Monday and Thursday.)
2. From the pull-down menus, select the time (hour and minutes and AM or PM) at which you want power turned on or off to the selected receptacle.
3. Select the check box(es) for the day(s) of the week you want the receptacle to be turned on and/or off at the time you specified.
4. When finished, click Set to save your settings for that receptacle.
5. Repeat steps **1** through **4** for the remaining power schedule setting for the receptacle you just scheduled, or for other receptacles that you want to schedule.

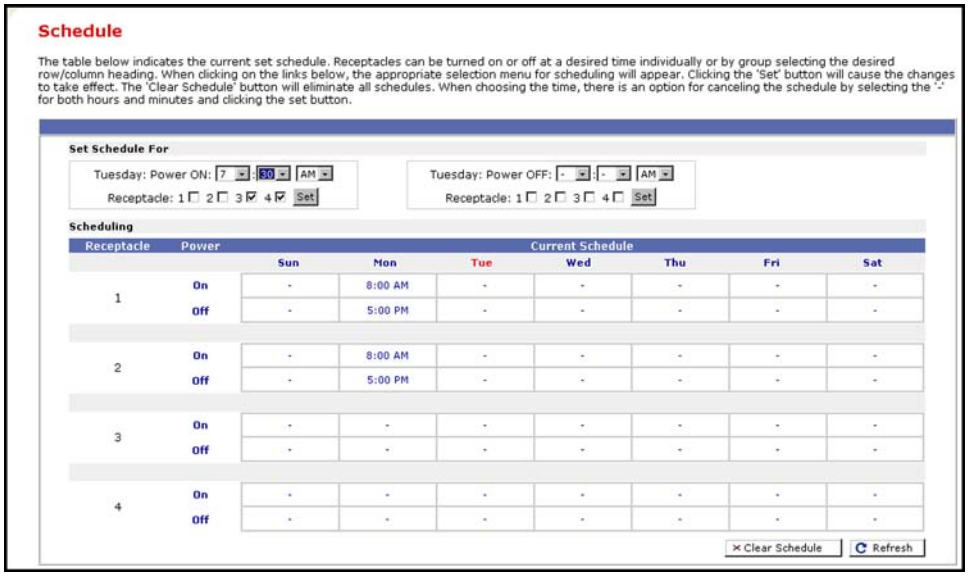
Scheduling receptacles by day of the week

There are two types of schedules that you can set up for one day of the week. The two setup procedures are described below.

All receptacles on and off

Follow this procedure to select both the powering on and powering off times for all desired receptacles on one day of the week.

1. Click on a day of the week at the top of a column in the scheduling table. Two Set Schedule For fields open, one for Power ON and one for Power OFF. These fields contain pull-down menus for selecting powering on and off times, as well as check boxes for selecting the receptacles you want to schedule.


Schedule
The table below indicates the current set schedule. Receptacles can be turned on or off at a desired time individually or by group selecting the desired row/column heading. When clicking on the links below, the appropriate selection menu for scheduling will appear. Clicking the 'Set' button will cause the changes to take effect. The 'Clear Schedule' button will eliminate all schedules. When choosing the time, there is an option for canceling the schedule by selecting the '-' for both hours and minutes and clicking the set button.
Set Schedule For
Tuesday: Power ON: 7 : 30 AM
Receptacle: 1 2 3 4 Set
Tuesday: Power OFF: - : - AM
Receptacle: 1 2 3 4 Set
Scheduling
Receptacle
Power
Current Schedule
Sun Mon Tue Wed Thu Fri Sat
1 On - 8:00 AM - - - - -
Off - 5:00 PM - - - - -
2 On - 8:00 AM - - - - -
Off - 5:00 PM - - - - -
3 On - - - - - - -
Off - - - - - - -
4 On - - - - - - -
Off - - - - - - -
Clear Schedule
Refresh

Schedule screen showing fields for daily receptacle scheduling

2. In either the Power ON or Power OFF section, select the hours, minutes, and AM/PM from the menus; and select the check box(es) for the receptacle(s) that you want to schedule.
3. In the section in which you made your selections, click Set to enter your choices. The field in which you made your selections closes.
4. If desired, repeat steps **2** and **3** in the other Set Schedule For field.

   If you do not want to make selections in the remaining Set Schedule For field, click Refresh to close the field.

NOTE *If you do not click Set before making any selections in the other field, the second field selections override those that you entered in the first.*

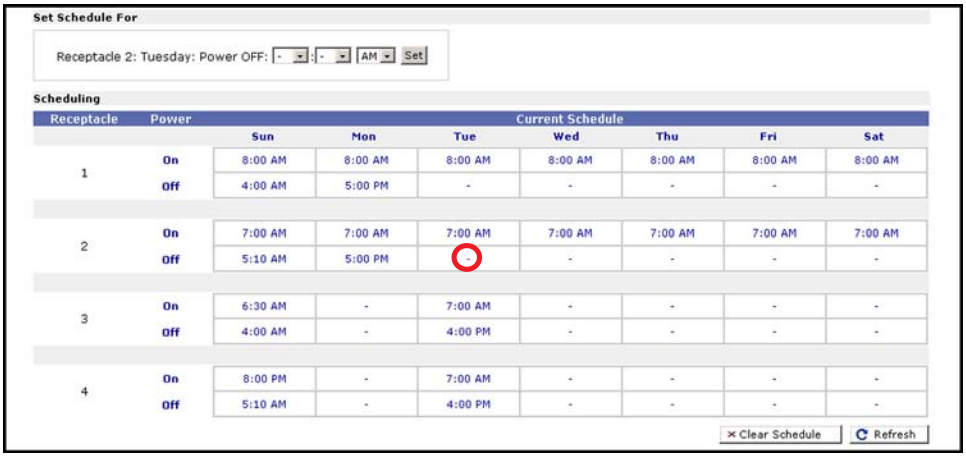
5. Repeat steps **1** through **4** for any additional days that you want to schedule.

One receptacle, power on or off

Follow this procedure if you want to schedule only powering on or powering off of one receptacle on one day.

1. In the scheduling table, click on the time displayed or the "-" symbol in the cell beside On or Off for the receptacle number that you want to set, in the column for the day you want to schedule. A Set Schedule For field appears.

   In the following illustration, the red circle indicates the cell that was selected: receptacle 2, powering off, on Tuesday.

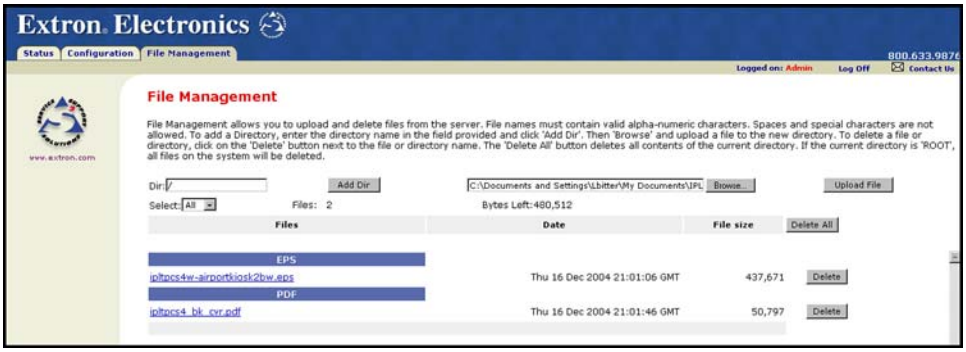

Set Schedule For
Receptacle 2: Tuesday: Power OFF: - : - AM Set
Scheduling
Receptacle
Power
Current Schedule
Sun
Mon
Tue
Wed
Thu
Fri
Sat
1
On 8:00 AM 8:00 AM 8:00 AM 8:00 AM 8:00 AM 8:00 AM 8:00 AM
Off 4:00 AM 5:00 PM - - - - -
2
On 7:00 AM 7:00 AM 7:00 AM 7:00 AM 7:00 AM 7:00 AM 7:00 AM
Off 5:10 AM 5:00 PM - - - -
3
On 6:30 AM - 7:00 AM - - - -
Off 4:00 AM - 4:00 PM - - - -
4
On 8:00 PM - 7:00 AM - - - -
Off 5:10 AM - 4:00 PM - - - -
Clear Schedule
Refresh

Set Schedule For field to set powering off for a single receptacle

2. In the Set Schedule For field, select the hour, minute(s), and AM or PM from the pull-down menus.
3. Click Set to enter your settings. The time that you entered appears in the cell that you selected on the Scheduling table.

File Management

The File Management Web page allows you to upload and delete files from the server. File names must contain valid alphanumeric characters and underscores; spaces and special characters (symbols) are not allowed. Only personnel with administrator access can view these pages and make changes.


Extron Electronics
Status
Configuration
File Management
800.633.9876
Logged on: Admin
Log Off
Contact Us
File Management
File Management allows you to upload and delete files from the server. File names must contain valid alpha-numeric characters. Spaces and special characters are not allowed. To add a Directory, enter the directory name in the field provided and click 'Add Dir'. Then 'Browse' and upload a file to the new directory. To delete a file or directory, click on the 'Delete' button next to the file or directory name. The 'Delete All' button deletes all contents of the current directory. If the current directory is 'ROOT', all files on the system will be deleted.
Dir: /
Add Dir
C:\Documents and Settings\LBitter\My Documents\IPL
Browse...
Upload File
Select: All
Files: 2
Bytes Left: 480,512
Files
Date
File size
Delete All
EPS
ipltpcs4w-airportkiosk2bw.eps
Thu 16 Dec 2004 21:01:06 GMT
437,671
Delete
PDF
ipltpcs4_bk_cvr.pdf
Thu 16 Dec 2004 21:01:46 GMT
50,797
Delete

File Management screen with two files uploaded

Uploading files to the Web page

The IPL T PCS4 has approximately 900 Kbytes of space for user files to be uploaded. The Bytes Left field shows how much space remains for uploading files.

To upload files, follow these steps:

1. Select the File Management tab on the IPL T PCS4 Web page.
2. On the File Management screen, click Browse to open a Windows file selection window.
3. On the file selection window, locate and select a file to upload. (Only one file at a time can be selected.) The file name and directory path appear in the Browse field on the File Management screen.
4. Click Upload File While the file is uploading, the button label changes to Uploading... .

When the uploading is complete, the uploaded file name appears in the Files list with a time stamp showing GMT time, and the button returns to its original state. (Files are listed separately under headings of their extensions.)

Adding a directory

To add a directory or folder to the IPL T PCS4's file system, follow these steps:

1. Enter a name for the directory in the Dir: field, following the slash (/).
2. Click Add Dir.
3. With the directory name displayed, perform the Uploading files procedure described in the previous section to add a file to the directory. The directory name appears at the top of the Files column, preceded by a slash.

   If no files are added to the new directory, it is deleted.

To add more files to the directory, click the directory name to open it, then use the Uploading files procedure. To exit the directory, click (root).

Other file management functions

On the File Management screen, you can also do the following:

- Open and view an uploaded file by clicking on its name.
- Delete an uploaded file by clicking on the Delete button beside it.
- Delete all uploaded files and directories by clicking the Delete All button.

Custom Web Pages

On the PCS4, custom Web pages are supported. You can determine the layout and appearance of the pages displayed on your screen. *Server side includes (SSIs)* enable you to obtain information from the unit and display the information on Web pages. Query strings allow you to send information and commands to the unit to change its configuration or provide you with feedback. (See *Query strings*, later in this chapter.)

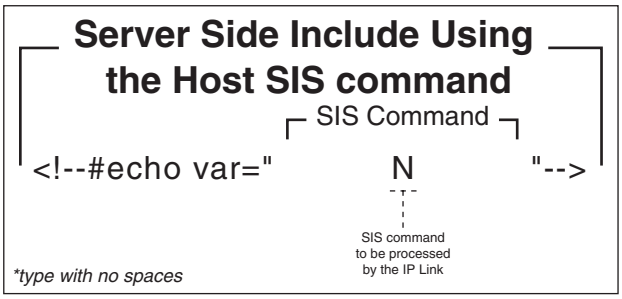
Server side includes (SSIs)

Server sides includes are a type of HTML comment that directs the Web server to dynamically generate data for a Web page whenever it is requested. SSIs typically use Extron's Simple Instruction Set™ (SIS™) commands to communicate with the products or attached control devices. Using SSIs, you can design and display custom pages, with PCS4 information provided by the SIS commands.

The basic format for an Extron SSI is:

<!—#echo var="x"—>
where x is the SIS command to be executed.

When a Web page is requested, the Web server removes the SSI and replaces it with the answer to the SIS command within quotes.



Example of SSI command

In the figure above, the "N" command is used to request the PCS4's part number.

Query strings

A query string is the portion of a URL that appears after the question mark. The query string contains parameters or instructions for the Web server to execute. The basic format for a query string within a link is:

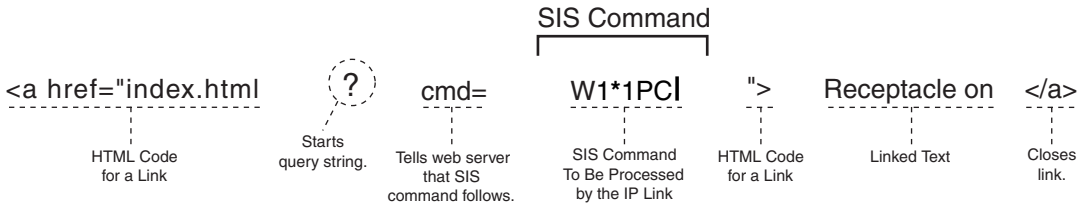
Receptacle 1
where x is the SIS command to be executed.

When a link is accessed on a Web page, the URL is passed to the Web server to tell it which Web page to return to the browser. The portion of the URL after the question mark is the query string, which contains the SIS command that the IPL T PCS4 will remove and execute.

Like SSI formatted commands, query strings can use any valid SIS command.

The query string in the figure below turns off DHCP on the IP Link device.

URL with a Query String Using an SIS Command



**Enter with no spaces.*

Example of a query string command

Code example

The following figure shows a practical use for both SSIs and query strings. In this example, the HTML source code contains three SSI commands.

```
<html>
<head><title>Example 1</title></head>
<h2 b>HTML Example #1</h2 b>
<body>
The following lines demonstrate how to read status from the IPLink Product:
IPLink Product Name: <b><!--#echo var="1I"--></b>
<br>
IPLink Product Description: <b><!--#echo var="2I"--></b>
<br>
IPLink Product Part Number: <b><!--#echo var="N"--></b>
</body>
</html>
```

SSI commands

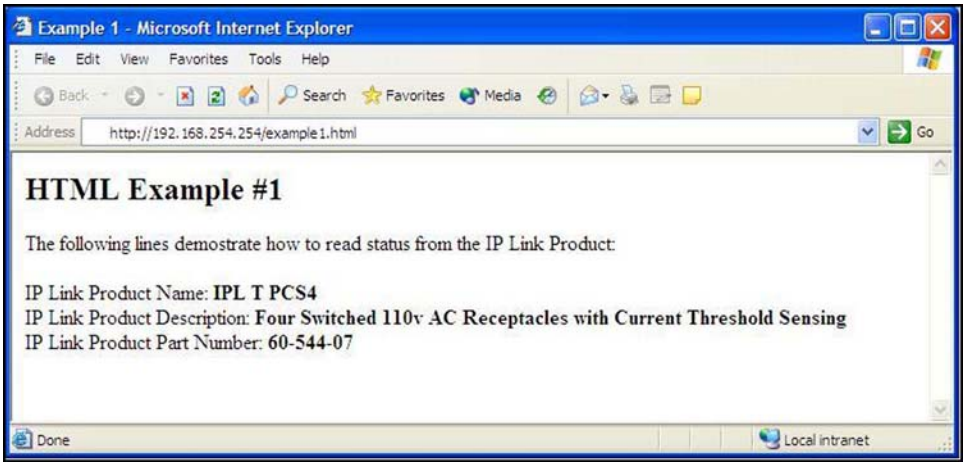
Web page HTML source code document showing SSIs

The SSI commands in the previous figure request the product name, product description and product part number of an IP Link device.

```
<html>
<head><title>Example 1</title></head>
<h2 b>HTML Example #1</h2 b>
<body>
The following lines demonstrate how to read status from the IPLink Product:
IPLink Product Name: <b>IPL T PCS4</b>
<br>
IPLink Product Description: <b>Four Switched 110v AC Receptacles with
Current Threshold Sensing</b>
<br>
IPLink Product Part Number: <b>60-544-07</b>
</body>
</html>
```

Resulting HTML source code served by an IP Link Web server

Notice, in the figure above, that the commands executed by the PCS4 in response to SSI references have been replied to, and were implemented when the Web page was served to the browser.


Example 1 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://192.168.254.254/example1.html
Go
HTML Example #1
The following lines demostrate how to read status from the IP Link Product:
IP Link Product Name: IPL T PCS4
IP Link Product Description: Four Switched 110v AC Receptacles with Current Threshold Sensing
IP Link Product Part Number: 60-544-07
Done
Local intranet

Browser view of previous HTML source code

URL encoding

URL (Universal Resource Locator) encoding is the method of using ASCII hexadecimal characters to display specific characters in a URL. It is used for several reasons. On some operating systems, certain characters are unsafe or not available, and others are reserved by the HTML or URL specification. URL encoding is used to insure compatibility and functionality with most Internet browsers. As a general rule, use the hexadecimal encoding method shown below when these characters appear in your URLs.

The following types of characters *do not* require encoding in a URL:

alphanumerics	0-9 a-z A-Z
special characters	$ _ _ . + ! * ( ) ,
reserved characters	; / ? : @ = & When used for their reserved purposes, these characters do not require encoding within a URL.

Characters that do not require encoding

Reserved characters

Reserved characters should not be encoded when they appear in their conventional meaning in a URL. For example, do not encode the slash (/) when using it as part of the URL syntax. Only encode unsafe characters (defined in the table in the next section) in your URLs.

The following table lists reserved characters.

Characters		Hex	Dec
$	Dollar	24	36
&	Ampersand	26	38
+	Plus	2B	43
,	Comma	2C	44
/	Forward slash / virgule	2F	47
:	Colon	3A	58
;	Semi-colon	3B	59
=	Equal	3D	61
?	Question mark	3F	63
@	“At” symbol	40	64

Reserved characters

Unsafe characters

URLs use some characters for “special use” in defining their syntax and these characters should be encoded. For various reasons, these characters may possibly be misunderstood within a URL. The following table lists unsafe characters.

Characters		Hex	Dec
	Space	20	32
" "	Quotation marks	22	34
<	“Less Than” symbol	3C	60
>	“Greater Than” symbol	3E	62
#	Pound	23	35
%	Percent	25	37
Miscellaneous characters			
{	Left curly brace	7B	123
}	Right curly brace	7D	125
|	Vertical bar / pipe	7C	124
\	Backslash	5C	92
^	Caret	5E	94
~	Tilde	7E	126
[	Left square bracket	5B	91
]	Right square bracket	5D	93
`	Grave accent	60	96

Unsafe characters

A/V Device Power Control

Power control of A/V devices may be accomplished once the PCS4 interface has been connected and configured. These include Web pages and Telnet.

Custom Web pages

These pages can either be modified versions of the existing Web pages, or new Web pages developed in the field.

Web page development can be done with a Web site development tool such as FrontPage or Dreamweaver. Custom Web pages can be loaded using the Web server File Manager (see *Managing Files*, earlier in this chapter).

Accessing and using Telnet (port 23)

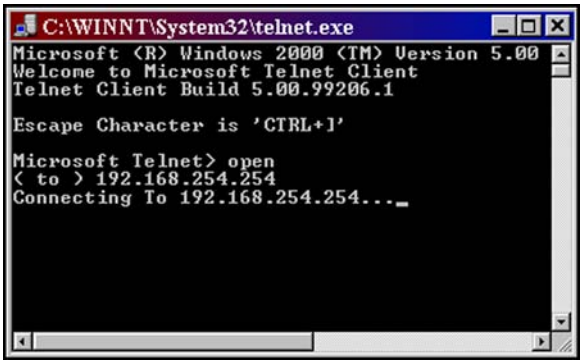
Telnet, short for Telecommunications Network, provides a way for you to connect to a computer or server (in this case, the PCS4 interface) on a network. Once connected via Telnet, you can send ASCII serial commands (see the *Command/ response table for SIS commands* in chapter 5) to configure and monitor the PCS4 settings.

1. Click Start, then Run, then enter **Telnet** and click OK. The Telnet program starts (see the figure below).

C:\WINNT\System32\telnet.exe
Microsoft (R) Windows 2000 (TM) Version 5.00
Welcome to Microsoft Telnet Client
Telnet Client Build 5.00.99206.1
Escape Character is 'CTRL+]'
Microsoft Telnet> _

Telnet command prompt

2. At the command prompt, enter **open**.
3. At the < to > prompt, enter the IP address of the PCS4 unit. (The default IP address is 192.168.254.254. If the address was changed in the setup or configuration process, use the new address.) Telnet defaults to port 23.



Connecting to the IP address

4. If passwords were set up for the connected system, you are prompted to log in as an administrator or a user. Otherwise the system responds with a carriage return and line feed (<cr/lf>).
5. Once you are connected, you can enter SIS commands as desired.
6. When you are finished entering commands to the interface, enter **Ctrl +]** at the command prompt to exit Telnet.

Troubleshooting

Turn on the equipment in the following order:

1. The PCS4 power control interface
2. The power receptacles on the PCS4
3. The connected output device(s)

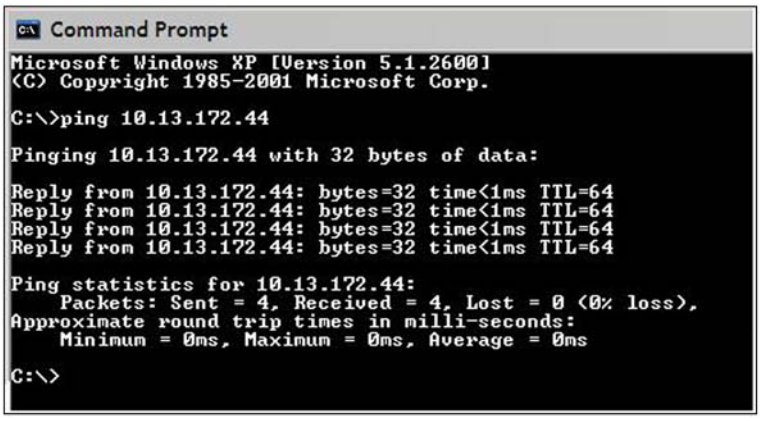
If the output A/V device cannot be powered on, check the following:

Power connections

1. Make sure that the receptacle for each device is receiving power. The receptacle's red Power LED lights if the receptacle is powered on. If necessary, press the receptacle button to apply power.
2. Ensure that all devices are plugged in properly to the rear panel of the PCS4 and switched on if applicable.

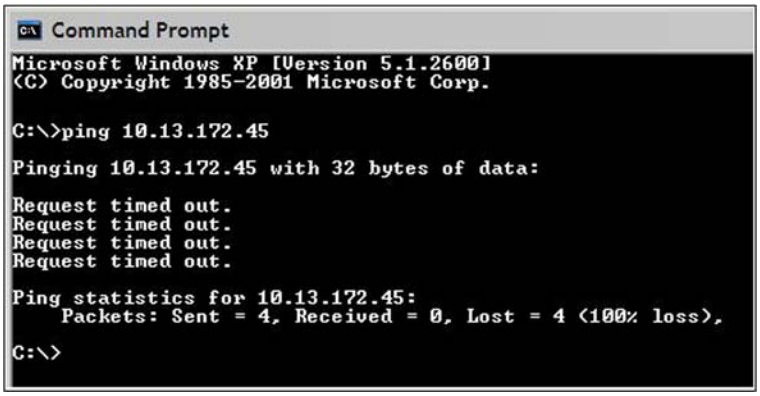
Network connections

1. Check the network connections and make adjustments as needed. The Link LED is solid green if a network connection is detected. The yellow ACT LED blinks if there is activity on the network. If these LEDs are not lit, either the cable is faulty or not plugged in, or the wrong type of cable is being used (refer to *Connecting the Hardware*, in chapter 2).
2. At the DOS command prompt, try to ping the unit by entering **ping** and the IP address assigned to your PCS4. (See *Setting up and configuring the PC using ARP*, in chapter 4.) If the PCS4 is connected, you receive the following response to your Ping command:



Successful Ping command response

If the connection was not made, the following response appears:


Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\>ping 10.13.172.45
Pinging 10.13.172.45 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 10.13.172.45:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>

Response to an unsuccessful ping command

If you get a response indicating that the ping was unsuccessful, do the following:

a. Make sure your unit is using the appropriate subnet mask (check with your system administrator).

b. Make sure your PC does not have a software firewall program which might block the IP address of the unit.

3. If contact is established with the unit, but the unit's Web pages cannot be accessed by your Web browser, verify (in the Options or Preferences menu) that your Web browser is configured for direct network connection and not set up to use a proxy server.

If you are still experiencing problems, call the Extron S³ Sales & Technical Support Hotline if needed.

Global Viewer Software

The Global Viewer Configurator (GVC) software is an alternative to using the Web pages to configure and monitor the PCS4. GVC is a free asset management software that enables flexible, centralized, Web-based power management for A/V systems. Using Global Viewer software, administrators can view the immediate status and power levels of all connected devices, schedule powering on and off of the devices, and configure the alarm triggers.

You can download the latest version of Global Viewer (1.6) from the Extron Web site as follows:

1. Select the Products tab on the Extron Web site home page.

2. From the side bar menu at the left of the screen, select Software, then Control Software.

3. On the Control Software page, click Global Viewer Configurator.

4. On the Download Center screen, fill in the requested information and click Download GVConfigInstallv16.exe. Follow the instructions on the subsequent screens to complete the download.

Chapter Five

SIS™ Programming and Control

Host-to-interface Communications

Using the Command/Response Tables

SIS™ Programming and Control

The IPL T PCS4 can be remotely set up and controlled via a host computer or other device (such as a switch, hub, or router) attached to the rear panel LAN port.

The PCS4 must be configured before use. As shipped, the PCS4 works as a standalone interface, but cannot control any other devices until it is configured.

The PCS4 can be set up and controlled by using the front panel (see chapter 3), the Web pages (see chapter 4), or Extron's Simple Instruction Set™ (SIS™) commands (discussed in this chapter). Both the Web pages and the SIS methods are accessed via Ethernet LAN connection.

LAN port defaults:
- **IPL T PCS4 IP address:** 192.168.254.254
- **Gateway IP address:** 0.0.0.0
- **Subnet mask:** 255.255.0.0
- **DHCP**: Off

Host-to-interface Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the PCS4 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the interface to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. (A string is one or more characters.)

Messages initiated by the IPL T PCS4

When a local event such as a front panel selection or adjustment takes place, the PCS4 responds by sending a message to the host. No response is required from the host. The following PCS4-initiated messages are sent (underlined):

©Copyright 2004, Extron Electronics, IPL T PCS4 and IPL T PCS4i,, Vx.xx ↵
Thu, 20 Feb 2004 17:51:04↵

The PCS4 sends the boot and copyright messages when it first powers on and is connected via Telnet or TCP/IP. Vx.xx is the firmware version number. The current date and time are displayed. If you are using a Telnet connection, the copyright message, date, and time are followed by a password prompt.

Password information

The "↵Password:" prompt is displayed only if there is a password defined in the unit. It requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If the correct password is entered, the unit responds with "↵Login Administrator↵" or "↵Login User↵," depending on the password entered. If the passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Error responses

When the PCS4 receives a valid SIS command, it executes the command and sends a response to the host device. If the PCS4 is unable to execute the command because the command is invalid or it contains invalid parameters, it returns an error response to the host.

The error response codes and their descriptions are as follows:

E12 – Invalid port number
E13 – Invalid value (the number is out of range/too large)
E14 – Not valid for this configuration
E17 – System timed out
E22 – Busy
E24 – Privilege violation
E25 – Device is not present
E26 – Maximum number of connections has been exceeded
E27 – Invalid event number
E28 – Bad filename or file not found

Error response references

The following superscripted numbers are used within the command descriptions on the following pages to identify commands that may respond as shown:

[14] = commands that give an E14 (invalid command for this configuration) response if sent to an IPL product whose power configuration does not support the command.

[24] = commands that give an E24 (privilege violation) response if you are not logged in at the administrator level.

[27] = commands that may yield an E27 (invalid event number) response.

[28] = cmmands that may give an E28 (file not found) response.

Using the Command/Response Table

The PCS4 can be controlled via either a Telnet (port 23) connection or a Web browser (port 80) connection. The ASCII and URL commands listed in the tables starting on page 5-7 perform the same functions, but they are encoded differently to accomodate the requirements of each port (Telnet or browser).

The ASCII to hexadecimal (HEX) conversion table below is for use with the command/response tables.

ASCII to HEX Conversion Table												Esc	1B	CR	ØD	LF	ØA
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

ASCII to Hex conversion table

The command/response tables list valid ASCII (for Telnet) command codes, the corresponding URL (universal resource locator) encoded (for Web browsers) command codes, the interface's responses to the host, and a description of the command's function or the results of executing the command.

- Upper- and lower-case characters may be used interchangeably in the command field unless otherwise specified.
- Commands may be sent back-to-back without spaces (for example, 2!65V1Z).

- Numbers can be entered as 1, 2, or 3 digits (e.g., 8V = 08V = 008V).
- There are a few differences in how to enter the commands, depending on whether you are using Telnet or a Web browser.
  - When using these commands through a Web browser, you can use the URL reference to shorten the examples. "URL" refers to the full address of the control interface and Web page reference, including all path information (e.g., *http://192.168.100.10/myform.htm*).
  - To send any of the commands using a Web browser you must prefix them with the full URL followed by **?cmd=**.
  - For control via a Web browser, all **non-alphanumeric characters** must be represented as the hexadecimal equivalent, %xx, where xx represents the two-character hex byte. For example, a comma (**,**) would be represented as **%2C**. Characters such as **%**, **+**, and the space character *must* be encoded as hex bytes, or they will be misinterpreted by the interface.
  - Some characters differ depending on the method you use to send the commands:

Telnet	**Web browser**
Escape (hex 1B)	W (must **not** be hex encoded)
Carriage return (hex 0D)	Pipe character (**|**) (must **not** be hex encoded)

NOTE *With Telnet you can use either an "Escape" command or a "W" command, and the carriage return or the pipe character. With the Web browser, you are required to use a "W" command and the pipe character.*

*In either method, {Data} = Data that will be directed to a specified port and **must** be hex encoded if non-alphanumeric.*

Symbol definitions

↵ = CR/LF (carriage return + line feed) (hex 0D 0A)

◄ = Soft carriage return (no line feed, hex 0D)
(For Web browser commands, use the | [pipe] character instead of the soft return.)

| = Pipe (vertical bar) character

• = Space

[24] = The [24] superscript indicates commands that give an E24 (privilege violation) message if you are not logged in at the administrator level.

[Esc] = Escape key (hex 1B)
(For Web browsers, use **W** instead of Esc.)

[X1] = Power receptacle (1-4)

[X3] = Greenwich Mean Time (GMT) offset value (-12.00 to +14.00) represents the time difference in hours and minutes (+/-hh:mm) relative to Greenwich, England. The plus sign and leading zero are optional. For example, 5:30 = +05:30.

[X5] = On/off status
0 = off/disable
1 = on/enable

[X6] = Dirty memory status
1 = RAM needs to be saved to flash memory.
0 = RAM has been saved to flash (OK to power off or reset).

[X9] = Current threshold sense
0 = clear/none
1 = standby
2 = full
(Full threshold must be set before standby.)

[X10] = Group number
0 = none
1 = yellow
2 = green
3 = red

(The exponent designates the port number. The color relates to setting groups via the front panel.)

[X11] = Version (typically listed to two decimal places, e.g., x.xx)

[X12] = Unit name. The name of the PCS4 is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and minus sign/hyphen (-). No blank or space characters are permitted as part of a name. No distinction is made between upper and lower case.

NOTE *The first character **must** be a letter. The last character must **not** be a minus sign/hyphen.*

[X13] = Local date and time format

Set format (MM/DD/YY-HH:MM:SS).
Example: 11/18/03-10:54:00.

Read format (day of week, day month year HH:MM:SS).
Example: Tue, 18 Nov 2004 18:19:33.

[X14] = IP address (xxx.xxx.xxx.xxx). Leading zeros in each of four fields are optional in setting values, and they are suppressed in returned values.

[X15] = E-mail domain name, e.g., *extron.com*.

[X16] = Power-up delay between ports in 1/3 second increments. 1-255 permitted. (Default is 3, which equals 1 second.)

[X18] = Hardware (MAC) address (xx-xx-xx-xx-xx-xx).

[X19] = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and they are suppressed in returned values.

[X22] = For Verbose/Response Mode:
0 = clear/none
1 = verbose mode
2 = tagged responses for queries
3 = verbose mode and tagged responses for queries
Default = 0

NOTE *If tagged responses is enabled, all read commands return the constant string plus the data, like setting the value does.*

Example:
Command: [Esc] *CN*◄
Response: Ipn • [X12]

[X33] = Password (minimum length = 4 characters; maximum length = 12 characters. No special characters are allowed.

[X34] = Daylight saving time (DST) is a 1-hour offset to reflect the time during which clocks are set one hour or more ahead of local standard time, to provide more daylight at the end of the working day. Supported for the U. S. and parts of Brazil and Europe.

Example: Time in California is GMT -8:00 from April to October and GMT -7:00 from November to March.

DST should be turned off in Hawaii, American Samoa, Guam, Puerto Rico, the Virgin Islands, the eastern time zone portion of the state of Indiana, and the state of Arizona (excluding the Navajo Nation).

0 = off/ignore
1 = on

[X41] = Reading password. Responds with four asterisks (****) in place of the password, if a password exists. Responds with an empty space if no password exists.

[X45] = E-mail event number (1 - 64)

[X46] = E-mail recipient's address (e.g., *JDoe@extron.com*) for the person to whom messages will be sent.

[X47] = Name (numeral) of e-mail file to be sent; e.g., *1.eml, 2.eml, ... 64.eml*.

[X49] = Default name: a combination of the model name and the last 3 pairs of the interface's MAC address (e.g., IPL-T-PCS4-00-02-3D).

[X52] = Connection's security level
11 = user
12 = administrator

[X63] = Pulse time in 20 ms per count. If this parameter is missing or = 0, then pulse length = default (25 = 500 ms). 35565 ms = max. pulse time.

X67 = Threshold settings for all ports
- 0 = None
- 1 = Full
- 2 = both (Full and Standby thresholds)

X69 = (Ethernet only) Number of seconds before timeout on IP connections (min = 1, max = 6500, and default = 30 = 300 seconds). If no data is received during the timeout period, the Ethernet connection is closed. Each step is 10 seconds. The response is returned with leading zeros.

X70 = The number (as an optional parameter) that is inserted into the e-mail message if the .eml file has an embedded Esc ↵ command (with no parameters).

X701 = Condition that is monitored
- 0 = Receptacle off
- 1 = Receptacle on
- 2 = Reference: None
- 3 = Reference: Standby
- 4 = Reference: Full
- 5 = Any change

X702 = Use alarm relay
- 0 = no/disable
- 1 = yes/enable

X703 = E-mail to use 61-64

X704 = Enable/disable monitoring
- 0 = disable monitoring
- 1 = enable monitoring
- 2 = enable with e-mail

X705 = Alarm status
- 0 = inactive
- 1 = active
- 2 = silenced

X706 = Clear value
- 0 = condition no longer met
- 1 = clear with output off
- 2 = clear with output on
- 3 = clear with no threshold
- 4 = clear with standby threshold
- 5 = clear with full threshold
- 6 = clear with any change
- 7 = manual

X707 = Relay polarity
- 0 = normally open
- 1 = normally closed

X708 = Time to hold alarm active before canceling
- 0 = never times out
- 1-7 = 1 to 7 minutes

X709 = On timed value
- 0-15 (in 250 ms)

X710 = Off timed value
- 0-15 (in 250 ms)

X711 = Day of the week
- 1 = Sunday
- 2 = Monday
- 3 = Tuesday
- 4 = Wednesday
- 5 = Thursday
- 6 = Friday
- 7 = Saturday

X712 = Time in minutes (0-1440)
- 0 = 00:00 a.m. (midnight)
- 1440 = clear schedule

Example: 1439 = 11:59

Use the following formula (in 24-hour time format):
(Hour * 60) + minutes = time in minutes

Command/response table for SIS commands

Command	ASCII (Telnet)	URL Encoded (Web)	Response
Power receptacle control / current sense			
Turn receptacle power on	Esc X1 * 1PC ←	W X1 %2A1PC |	Cpn X1 • Ppc 1 ↵
Turn receptacle power off	Esc X1 * 0PC ←	W X1 %2A0PC |	Cpn X1 • Ppc 0 ↵
View receptacle power status	Esc X1 PC ←	W X1 PC |	X5 ↵
Query receptacle current status	Esc X1 PS ←	W X1 PS |	X9 ↵
Group receptacles	Esc X10[1] X10[2] X10[3] X10[4] GP ←	W X10[1] X10[2] X10[3] X10[4] GP |	Pgp X10[1] X10[2] X10[3] X10[4] ↵
Ungroup receptacles	Esc 0000GP ←	W0000GP |	Pgp0000 ↵
View receptacles grouping	Esc GP ←	WGP |	X10[1] X10[2] X10[3] X10[4] ↵
Set power up delay	Esc X16 DT ←	W X16 DT |	Pdt X16 ↵
View power up delay	Esc DT ←	W DT |	X16 ↵
Set individual full threshold	Esc X1 * 2 TH ←	W X1 %2A 2 TH |	Ptf X1 ↵
Set individual standby threshold	Esc X1 *1 TH ←	W X1 %2A 1 TH |	Pts X1 ↵
Clear individual threshold	Esc X1 * 0 TH ←	W X1 %2A 0 TH |	Ptc X1 ↵
View threshold settings for all ports	Esc TH ←	W TH |	X9[1], X9[2], X9[3], X9[4] ↵
Set Executive mode on	1X	1X	Exe1 ↵
Set Executive mode off	0X	0X	Exe0 ↵
View Executive mode	X	X	X5 ↵
Power receptacle monitoring and alarm functions			
Set alarm conditions	Esc X1 * X701 * X702 * X703 SA ←	W X1 %2A X701 %2A X702 %2A X703 SA |	Ast X1*X701*X702*X703*X704*X705 ↵
View alarm conditions	Esc X1 SA ←	W X1 SA |	X1 * X701 * X702 * X703 * X704 * X705 ↵
Monitoring enable or disable	Esc X1 * X704 SA ←	W X1 %2A X704 SA |	Ast X1*X701*X702*X703*X704*X705 ↵
Set Alarm mode	Esc X706*X707*X708*X709*X710 MA ←	W X706%2AX707%2AX708%2X709%2AX710	Arl X706 * X707 * X708 * X709 * X710 ↵
View Alarm mode	Esc MA ←	WMA |	X706 * X707 * X708 * X709 * X710 ↵
Power receptacle scheduling			
Set scheduling	Esc X1 * X711 * X5 * X712 SS ←	W X1 %2AX711 %2AX5 %2AX712 SS |	Sst X1 * X711 * X5 * X712 ↵
View scheduling	Esc X1 * X711 * X5 SS ←	W X1 %2AX711 %2A X5 SS |	X712 ↵
Alarm relay functions			
Turn alarm relay ON	1 * 1O ←	1%2A1O |	Cpn 1• Rly 1 ↵
Turn alarm relay OFF	X1 * 0O ←	X1 %2A0O |	Cpn 1 • Rly 0 ↵
View alarm relay state	1O ←	1O |	X5 ↵
Pulse relay	1 * 3 * X63 O ←	1%2A3%2A X63 O |	Cpn 1• Rly 1 ↵ or Cpn 1• Rly 0 ↵
Toggle relay	1 * 2O ←	1%2A2O |	Cpn 1• Rly 1 ↵ or Cpn 1• Rly 0 ↵

Command/response table for SIS commands (continued)

Command	ASCII (Telnet)	URL Encoded (Web)	Response
Ethernet data port commands			
Set current connected port timeout	Esc 0 * X69 TC←	W 0 %2A X69 TC|	Pti 0 * X69↵
View current connected port timeout		Esc 0TC←	W0TC| X69
Set global IP port timeout	Esc 1 * X69 TC	W1%2A X69 TC|	Pti1 * X69
View global IP port timeout	Esc 1TC←	W1TC|	X69
Firmware version, part number, and information requests			
Query firmware version	Q	Q	X11 ↵
Query firmware information	1Q	1Q	X11 ↵
Query bootstrap version	2Q	2Q	X11 ↵
Query factory firmware version	3Q	3Q	X11 ↵
Query updated firmware version	4Q	4Q	X11 (kernel version - model description - date time)↵
Query verbose version information	0Q	0Q	X11 ↵
NOTE	*An asterisk (*) after a version number indicates the version that is currently running. Question marks (?.??) indicate that only the factory firmware version is loaded. A caret (^) indicates the firmware version that should be running; however, a mode 1 reset was executed and the factory default firmware version is currently loaded. An exclamation point (!) indicates corrupted firmware.*		
Request interface part number	N	N	60-544-07 or 60-544-09↵
Request model name	1I	1I	IPL T PCS4 or IPL T PCS4i↵
Request model description	2I	2I	Four switched 110 or 220 V AC receptacles with current threshold sensing↵
Request system memory usage	3I	3I	# of bytes/Kbytes used out of # of Kbytes
Request user memory usage	4I	4I	# of bytes/Kbytes used out of # of Kbytes
E-mail commands			
Configure e-mail events (mailbox)[24]	Esc X45, X46, X47 CR←	W X45 %2C X46 %2C X47 CR|	Ipr X45, X46, X47↵
Example:	Esc 5,jdoe@extron.com,7.eml CR←	W 5%2Cjdoe%40extron%2Ecom%2C7%2EemlCR|	Ipr 5, jdoe@extron.com, 7.eml↵
View e-mail events (mailbox)	Esc X45 CR←	WX45CR|	X46, X47↵
Send e-mail events (file named in mailbox)[24]	Esc X45 SM←	WX45SM|	Eml X46↵
Send e-mail (using different file)[24]	Esc X45, X70, X47 SM←	WX45%2C X70%2C X47 SM|	Eml X46↵
Web browser-specific commands			
Read response from last URL cmd	Esc UB←	WUB|	Response from command↵

Command/response table for SIS commands (continued)

Command	ASCII (Telnet)	URL Encoded (Web)	Response
Mail server setup commands			
Set mail server IP, unit domain name[24]	Esc X14, X15 CM↵	W X14 %2C X15 CM|	Ipm• X14, X15↵
View mail server IP, unit domain name	Esc CM↵	WCM|	X14, X15↵
IP setup commands			
Set the unit name[24]	Esc X12 CN↵	WX12 CN|	Ipn• X12↵
Set unit name to factory default[24]	Esc • CN↵	W%20CN|	Ipn• X49↵
View unit name	Esc CN↵	WCN|	X12 ↵
Set date/time[24]	Esc X13 CT↵	W X13 CT|	Ipt• X13↵ **Example:** *11/18/03-10:54:00*
View date/time	Esc CT↵	WCT|	X13↵ **Example:** Tue, 18 Nov 2003 18:19:33
Set GMT offset[24]	Esc X3 CZ↵	W X3 CZ|	Ipz X3↵
View GMT offset	Esc CZ↵	WCZ|	X3↵
Set daylight savings time[24]	Esc X34 CX↵	W X34 CX|	Ipx X34 ↵
View daylight savings time	Esc CX↵	WCX|	X34 ↵
Set DHCP on[24]	Esc 1 DH↵	W 1DH|	Idh 1 ↵
Set DHCP off[24]	Esc 0 DH↵	W 0DH|	Idh 0 ↵
View DHCP mode	Esc DH↵	WDH|	X5 ↵
Set IP address[24]	Esc X14 CI↵	WX14 CI|	Ipi• X14 ↵
View IP address	Esc CI↵	WCI|	X14 ↵
View hardware address (MAC)	Esc CH↵	WCH|	X18 ↵
Set subnet mask[24]	Esc X19 CS↵	W X19 CS|	Ips• X19 ↵
View subnet mask	Esc CS↵	WCS|	X19 ↵
Set gateway IP address[24]	Esc X14 CG↵	W X14 CG|	Ipg• X14 ↵
View gateway IP address	Esc CG↵	WCG|	X14 ↵
Set verbose mode[24]	Esc X22 CV↵	W X22 CV|	Vrb X22 ↵
NOTE *The IPL T PCS4 can send out unsolicited information (such as notice of a power level change). This is called a **verbose** (wordy) relationship between the interface and a connected device. When connected via Ethernet, verbose mode is disabled (by default) in order to reduce the amount of communication traffic on the network. If you want to use the verbose mode with an IPL T PCS4 connected via Ethernet, this mode must be set to ON each time you reconnect to the network.*			
View verbose mode status	Esc CV↵	WCV|	X22 ↵
Get connection listing	Esc CC↵	W CC|	Number of connections

Command/response table for SIS commands (continued)

Command	ASCII (Telnet)	URL Encoded (Web)	Response
Password and security settings			
Set administrator password[24]	Esc X33 CA←	W X33 CA|	Ipa• X41 ↵
Clear administrator password[24]	Esc •CA←	W %20CA|	Ipa• ↵
NOTE *Entering a password when the IPL T PCS4 has not been configured for one yields an E14 response from the interface. A user password cannot be assigned if an administrator password does not exist. If the administrator password is cleared (removed), the user password is also removed.*			
View administrator password[24]	Esc CA←	WCA|	X41 ↵
Set user password[14 24]	Esc X33 CU←	W X33 CU|	Ipu• X41 ↵
Clear user password[24]	Esc •CU←	W%20CU|	Ipu• ↵
View user password[24]	Esc CU←	WCU|	X41 ↵
Query session's security level	Esc CK←	WCK|	X52 ↵
Remapping port designations			
NOTE *Duplicate port# assignments are not permitted; i.e., Telnet and Web cannot be the same). Entering duplicate port assignments results in an E13 Invalid parameter) error message.*			
Set Telnet port map[24]	Esc {port #} MT←	W {port #} MT|	Pmt {port #}↵
Reset Telnet port map[24]	Esc 23MT←	W23MT|	Pmt 00023↵
Disable Telnet port[24]	Esc 0MT←	W0MT|	Pmt 00000↵
View Telnet port map	Esc MT←	WMT|	{port #}↵
Set Web port map[24]	Esc {port #} MH←	W {port #} MH|	Pmh {port #}↵
Reset Web port map[24]	Esc 80MH←	W80MH|	Pmh 00080↵
Disable Web port map[24]	Esc 0MH←	W0MH|	Pmh 00000↵
View Web port map	Esc MH←	WMH|	{port #}↵
Directory commands			
Change/create directory	Esc *{path}/{directory}*/CJ←	W *{path}/{directory}*/CJ|	Dir•*{path}/{directory}*/↵
NOTE *A directory does not truly exist until a file has been copied into the path.*			
Move back to root directory	Esc / CJ←	W%2FCJ|	Dir•/↵
Move up one directory	Esc ..CJ←	W%2E%2ECJ|	Dir•*{path}/{directory}*/↵
View current directory	Esc CJ←	WCJ|	*{path}/{directory}*/↵
File erase commands			
Erase user-supplied Web page/file[24, 28]	Esc *{filename}* EF←	W *{filename}* EF|	Del • *{filename}*↵
Erase current directory and its files[24, 28]	Esc /EF←	W/EF|	Ddl↵
Erase current directory and subdirectories[24, 28]	Esc//EF←	W//EF|	Ddl↵

Command/response table for SIS commands (continued)

Command	ASCII (Telnet)	URL Encoded (Web)	Response
File listing commands			
List files from current directory	Esc DF↵	WDF|	**Telnet text responses:** *filename x • date/time • length* ↵ *filename x • date/time • length* ↵ *filename x • date/time • length* ↵ ... *space_remaining • bytes left* ↵ ↵ **Web responses: HTML sample code** var file – new Array (); file [1] = *'filename1, date1, filesize1'*; file [2] = *'filename2, date2, filesize2'*; ... file [*n*] = *'filename n, date n, filesize n'*; file [*n*+1]=*'space remaining*, Bytes Left'
List files from current directory and below	Esc LF↵	WLF|	**Telnet text responses:** *path/directory/filename x• date/time• length* ↵ *path/directory/filename x• date/time• length* ↵ *path/directory/filename x• date/time• length* ↵ ... *space_remaining • Bytes Left* ↵ ↵ **Web responses: HTML sample code** var file – new Array (); file [1] = *'path/directory/filename1, date1, filesize1'*; file [2] = *'path/directory/filename2, date2, filesize2'*; ... file [*n*] = *'filename n, date n, filesize n'*; file [*n*+1]=*'space remaining*, Bytes Left'

NOTE *The response to this command is the same as for the "List files from current directory" command (DF), except that* {path}/{directory *precedes filenames for files from subdirectories below the current directory.*

Command/response table for SIS commands (continued)

Command	ASCII (Telnet)	URL Encoded (Web)	Response
Stream files via port 80			
Load file to user flash memory	Use a POST on port 80, followed by the delimited data to be written to the flash file memory.		
Retrieve file from user flash memory[24] [28] **Example:** http://192.168.254.254/mypage.html?cmd=WSF	Send a page GET on port 80 followed by WSF|		{Raw unprocessed data in file}
Stream files via Telnet			
Load file to user flash memory[24] [28]	Esc + UF *{filesize}*, *{filename}*←	{raw unprocessed data in file up to file size}	Upl↵
Retrieve file from user flash memory[24] [28]	Esc *{filename}* SF←	1B *{filename}* 53 46 0D	{Four bytes of *file size* + raw unprocessed data in file}
Reset (zap) and erase commands			
Erase the user flash memory[24] (files only)	Esc ZFFF←	WZFFF|	Zpf↵
Reset all device settings to factory default[24]	Esc ZXXX←	WZXXX|	Zpx↵
Absolute system reset[24]	Esc ZQQQ←	WZQQQ|	Zpq↵

Appendix A

Reference Material

Specifications

Part Numbers and Accessories

Glossary

Reference Material

Specifications

Ethernet control interface

Connectors	1 RJ-45 female auto sense connector
Data rate	10/100 Base-T, half/full duplex with autodetect
Protocols	ARP, DHCP, ICMP (ping), TCP/IP, UDP/IP, Telnet, HTTP, SMTP
Default settings	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = off
Program control	Extron's Simple Instruction Set (SIS™)
Global Viewer requirements	Microsoft® Internet Explorer ver. 6 or higher

AC control interface

Connectors	
IPL T PCS4	4 Edison power connectors
IPL T PCS4i	4 IEC power connectors
Voltage	
IPL T PCS4	120 VAC, 50-60 Hz
IPL T PCS4i	220 VAC, 50-6- Hz
Minimum AC load	
IPL T PCS4	20 mA, 4 watts at 120 VAC
IPL T PCS4i	20 mA, 4 watts at 220 VAC
Maximum AC load, aggregate	
IPL T PCS4	10 A, 1000 watts at 120 VAC
IPL T PCS4i	10 A, 1000 watts at 220 VAC
Maximum AC load, individual	
IPL T PCS4	10 A, 1000 watts at 120 VAC
IPL T PCS4i	10 A, 1000 watts at 220 VAC

Relay control interface

Connector	(1) 3.5 mm captive screw connector, 2 pole Default = normally open

General

Power input	
PL T PCS4	120 VAC, 50/60 Hz, 15 watts, internal
IPL T PCS4i	220 VAC, 50/60 Hz, 15 watts, internal
Temperature/humidity	Storage -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes, with optional 1U rack shelf, part #60-190-01 Also under-furniture mountable with optional brackets, part #70-077-01.
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.7" W x 9.5" D (1U high, half rack wide) 4.3 cm H x 22.0 cm W x 24.1 cm D (Depth excludes connectors.)

Product weight	2.6 lbs (1.2 kg)
Shipping weight	5 lbs (3 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Part Numbers and Accessories

Included parts

These items are included in each order for anIPL T PCS4 or IPL T PCS4 i interface:

Included parts	Replacement part number
IPL T PCS4	60-544-07
IPL T PCS4i	60-544-09
Rubber feet (self-adhesive) (4)	
2-pin female captive screw terminal (1)	
14 AWG IEC power cord (IPL T PCS4 only)	
Tweeker (small screwdriver)	
IPL T PCS4 User's Manual	
Insert Card for power cord	

Optional accessories

These items are optional for the IPL T PCS4 or the IPL T PCS4i:

Optional accessories	Replacement part number
1 U 19" rack shelf mounting kit	60-190-01
Under desk mounting kit	70-077-01

Glossary

10/100Base-T is Ethernet that uses unshielded twisted pair (UTP - Cat 5, etc.) cable, in which the amount of data transmitted between two points in a given amount of time is equal to either 10 Mbps or 100 Mbps.

Address Resolution Protocol (ARP) is a protocol which assigns an IP address to a device based on the device's MAC or physical machine address.

Alarm relay is a single pole, single throw relay, which can be used with a relay-controllable audible siren or any other alarm.

Alarm status on the PCS4 Web page reflects the state of the monitored condition. It may be inactive, active, or silenced.

AWG (American Wire Gauge) is a standard measurement for wire conductor diameter.

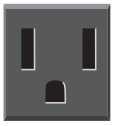
Condition is a state for which the PCS4 is being monitored. When a monitored condition is met, the PCS4 may sound an alarm or send an e-mail message, depending on how the system has been configured (via the front panel or the Monitor Web page). Examples of conditions that can be monitored include Receptacle Off, Any Change, or Reference: None.

Custom Web page is any file that can be loaded into an IPL T PCS4 and served by the PCS4's internal Web server. The Web page provides a way to control and monitor the PCS4's output power receptacles. This is true with or without an accompanying event script. Any number and size of graphics can be used, but if they are too large to fit in the PCS4's nonvolatile memory, you can create Web pages so that they can be served from another Web server. If you install Microsoft Internet Information Services (IIS) on your desktop, you can serve any page on its hard disk. The IPL T PCS4 functions like a little computer with a Web server—you can use it for various Web-based tasks.

DHCP is the Dynamic Host Configuration Protocol (DHCP), a standardized communications protocol that enables network administrators to locally and automatically manage the assignment of IP addresses in an organization's network.

Driver is a package of commands that generates or is the event script that controls devices.

Edison receptacle is a standard power connector. The rear panel of the IPL T PCS4, U. S. version, has four female Edison receptacles into which devices are plugged in order to be monitored, scheduled, and powered on and off by the PCS4.



Ethernet is a network protocol that uses MAC addresses instead of IP addresses to exchange data between computers. Using ARP (see above) with TCP/IP support, Ethernet devices can be connected to the Internet. An Ethernet LAN typically uses unshielded twisted pair (UTP) wires. Ethernet systems currently provide transmission speeds of 10 Mbps or 100 Mbps.

Executive mode is an operating mode in which the IPL T PCS4 does not accept commands from the front panel. Also called front panel security lockout.

Firmware is embedded software that is stored permanently in read-only memory (ROM) and contains basic instructions for how the PCS4 operates. Firmware upgrades are periodically made available for uploading via the IPL T PCS4 Firmware Upgrade Web page.

Full reference threshold is the point at which a device starts to operate at full power.

HTTP is an acronym for the HyperText Transfer Protocol (HTTP), a Web protocol based on TCP/IP, that is used to fetch HyperText objects from remote Web pages.

IEC power receptacle is a standard power connector. The IPL T PCS4i rear panel has four female IEC receptacles into which devices are plugged in order to be monitored, scheduled, and powered on and off by the PCS4i.

IP (Internet Protocol) is the protocol or standard used to send information from one computer to another on the Internet.

IP address is a unique, 32-bit, binary number (12 digit decimal number, xxx.xxx.xxx.xxx) that identifies each device or device port (an information sender and/or receiver) that is connected to a LAN, WAN, or the Internet. IP addresses can be static (see static IP) or dynamic (see DHCP).

IP net mask/subnet mask is a 32-bit binary number (12 digit decimal number, xxx.xxx.xxx.xxx) used on subnets (smaller, local networks) to help routers determine which network traffic gets routed internally (within the subnetwork) to local computers and which network traffic goes out to the rest of the network or the Internet.

Media Access Control (MAC) Address is a unique hardware number given to devices that connect to a network such as the Internet. When your computer or networking device (router, hub, interface, etc.) is connected to a LAN or the Internet, a table (see ARP) relates the device's IP address to its corresponding physical (MAC) address on the LAN.

Ping is a utility/diagnostic tool that tests network connections. It is used to determine if the host has an operating connection and is able to exchange information with another host.

Port number is a preassigned address within a server that provides a direct route from the application to the transport layer or from the transport layer to the application of a TCP/IP system. The standard ports used are 23 for Telnet and 80 for Ethernet.

Power level reference threshold. (See *Reference threshold*.)

Reference threshold is the point at which the power level (full or standby) at which a device is operating changes. This threshold is recognized by the IPL T PCS4, which can be configured to sound an alarm whenever a connected device passes this threshold.

Receptacle is a fitting connected to a power supply and equipped to receive a plug. The IPL T PCS4 has four receptacles into which devices can be plugged, enabling the PCS4 to monitor and schedule power for the connected devices.

SIS (Simple Instruction Set) commands are a set of commands developed by Extron that allow control of the PCS4 via the keyboard of a PC with an Ethernet connection. A minimal number of characters are used in these commands and responses.

Standby reference threshold is the point at which a device starts to operate at standby power.

Static IP refers to an IP address that has been specifically (instead of dynamically—see DHCP above) assigned to a device or system in a network configuration. This type of address requires manual configuration of the actual network device or system and can be changed only manually or by enabling DHCP.

Subnet. *See Subnetwork.*

Subnet address The portion of an IP address that is specifically identified by the subnet mask as the subnetwork.

Subnet mask A 32-bit address mask used in IP to identify the bits of an IP address that are used for the subnet address. Using a mask, the router does not need to examine all 32 bits, only those selected by the mask.

Subnetwork is a network that is part of a larger IP network and is identified by a subnet address. Networks can be segmented into subnetworks to provide a hierarchical, multilevel routing structure.

TCP (Transmission Control Protocol) is a connection-oriented protocol defined at the Transport layer of the OSI reference model. It provides reliable delivery of data.

TCP/IP (Transmission Control Protocol/Internet Protocol) is the communication protocol (language) of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.

Telnet is a standard terminal emulation utility/protocol that allows a computer to communicate with a remote user/client. A user who wishes to access a remote system initiates a Telnet session using the address of the remote client. The user may be prompted to provide a user name and password if the client is set up to require them. Telnet enables users to log in on remote networks and use those resources as if they were locally connected.

Threshold. See *Reference threshold*.

Threshold status is reported on the IPL T PCS4 System Status screen in the AC Receptacles section. It indicates the current reference threshold (Full, Standby, None, or Not Set) for each PCS4 receptacle.

UID (User ID) is an optional user name, for which a field is provided on the Enter Password window that opens if a password has been assigned to the PCS4.

URL (Universal Resource Locator) is an address that lets a resource on the internet be identified, located, and accessed.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

www.extron.com

Extron Electronics, USA
1230 South Lewis Street
Anaheim, CA 92805
USA
714.491.1500
Fax 714.491.1517

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands
+31.33.453.4040
Fax +31.33.453.4050

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Building
Singapore 368363
+65.6383.4400
Fax +65.6383.4664

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082 Japan
+81.3.3511.7655
Fax +81.3.3511.7656

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